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Reference

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Ch 1.

FIELD MANUAL

TECHNICAL ESCORT OPERATIONS

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CHANGE }

No. 1 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 December 1975

TECHNICAL ESCORT OPERATIONS

FM 3-20, 11 May 1972, is changed as follows:

1. Remove old pages and insert new pages as indicated below:

<i>Remove pages—</i>	<i>Insert pages—</i>
✓ i	i
✓ 1-1 through 1-3	1-1 and 1-2
✓ 2-1 through 2-6	2-1 through 2-6
✓ 2-9 through 2-11	2-9 through 2-12
✓ 3-1 through 3-4	3-1 through 3-4
✓ 3-11 and 3-12	3-11 and 3-12
✓ 3-15 and 3-16	3-15 and 3-16
✓ 3-19 through 3-22	3-19 through 3-22
✓ 3-27 through 3-29	3-27 through 3-29
✓ 4-1 through 4-12	4-1 through 4-10
✓ 5-1 through 5-4	5-1 through 5-4
✓ 5-7 and 5-8	5-7 and 5-8
✓ 6-1 through 6-4	6-1 through 6-4
✓ A-1 through A-4	A-1 through A-4
✓ E-1 through E-4	E-1 through E-4
✓ G-5 through G-10	G-5 through G-10
✓ M-1 through M-3	M-1 through M-3
✓ Glossary-1 through Glossary-5	Glossary-1 through Glossary-5
✓ Index-1 and Index-2	Index-1 and Index-2

2. This change deletes discussion of aggressive and chemical biological action by US forces and updates tariff information. It also changes the manual to reflect the redesignation of certain US Army organizations.

3. A star indicates new or changed material.

4. File this sheet in front of the manual for reference purposes.

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FIELD MANUAL

No. 3-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 11, May 1972

TECHNICAL ESCORT OPERATIONS

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CHAPTER 1

GENERAL

Section I. INTRODUCTION

1-1. Purpose

This manual is to be used as a guide for training and employment of technical escort team personnel in the accomplishment of an escort mission. It is designed to provide the escort team leader and team personnel with basic information needed to react effectively to emergency situations involving the accidental release of toxic or radioactive materials to the atmosphere. The procedures outlined are designed to minimize the spread and effects of toxic or radioactive materials.

1-2. Scope

a. This manual describes the organization, responsibilities, and functions of the technical escort team, its operating procedures, the duties and responsibilities of personnel, and special problems affecting mission performance. The manual may be used in conjunction with both military and civil publications governing the movement of toxic or hazardous materials by rail, road, sea, and air. Other technical manuals must be used to provide specific data on supplies and equipment too detailed for the scope of this publi-

cation. Specific characteristics and handling procedures for a particular munition, the use of decontaminants, blocking and bracing requirements, and so forth can all be obtained from appropriate publications cited throughout this manual.

b. The methods and procedures described are applicable during emergencies, both in CONUS and in overseas theaters. However, the movement of hazardous cargo within an overseas theater is governed primarily by the theater of operations commander and circumscribed by the laws and regulations of that country.

c. Information provided in this manual is designed to describe general escort procedures and emergency reactions. Detailed and specific policies expressed by a service are not included except in situations where it is necessary for clarification of subsequent points.

*d. This manual is in consonance with the following international standardization agreements, which are identified by type of agreement and number at the beginning of each appropriate chapter in the manual:

<i>Title</i>	<i>NATO STANAG</i>	<i>CENTO STANAG</i>	<i>SEATO STANAG</i>	<i>ABCA SOLOG</i>	<i>ASCC AIR STD</i>
Explosive Ordnance Reconnaissance/Explosive Ordnance Disposal (EOR/EOD)	2143				
Definitions and Regulations for Military Motor Movements by ROAD	2154 (2d ed)	2154	2154		
Air Transportation of Dangerous Cargo	3327 (2d ed)	3327	3327		44/9A
Restraint of Cargo in Fixed Wing Aircraft	3400		3400		44/14B
Classification, Certification and Labeling of Dangerous Cargo	3571				
Aircraft Cargo Tie-Down Fittings					17/38
Cargo Aircraft Tie-Down Fittings, Strength and Location					44/17A
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1-3. Comments

Users of this manual are encouraged to submit recommended changes and comments to improve the publication. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons will be provided for each comment to insure under-

standing and complete evaluation. Comments should be prepared using DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to the Commandant, US Army Missile and Munitions Center and School, ATTN: ATSK-CTD, Redstone Arsenal, Alabama 35809.

Section II. RESPONSIBILITIES

1-4. General

Since the control and disposition of toxic materials are the responsibilities of the accountable service, regardless of its location, Joint Service Regulation AR 740-32 requires that each military service meet its own technical escort requirements for movement. Because of diversities of mission, interest, and requirements, each service is organized differently to meet its individual contingencies. This means that the organization to provide this service will vary between services. Although the technical escort organization is different, the overall team's functions, while on an escort mission, will remain relatively standard due to the nature of the escorted materials.

1-5. Mission

*a. The mission of technical escort is to accompany shipments of certain chemical, biological, and etiological materials and chemical munitions with qualified personnel equipped to assure a high degree of safety and security of the shipment. In addition to this requirement, AR 740-32 imposes a responsibility for accompanying shipments of radioactive materials requiring a Department of Transportation (DOT) waiver or special permit. Possibly at the scene of a CBR accident or incident, the rendering safe of CBR materials and subsequent disposal of CB materials and chemical munitions may also be required.

*b. The technical escort team assigned an escort mission assumes responsibility from the point of departure until the shipment is delivered to the receiving agency except during an accident, when the responsibility is released to the Chemical Accident/Incident Control Officer (CAICO) or on-scene commander. Escort responsibilities include—

* (1) Assuring physical safety and security of the cargo to prevent loss, theft, and damage which may constitute a hazard to personnel.

(2) Protecting personnel (military and civilian) who may be endangered by contamination in the event of an accidental release of hazardous material to the atmosphere.

(3) Making emergency repair of leaking con-

tainers or munitions during shipment.

(4) Rendering safe, or disposing of, any munitions during shipment, as necessary and within the team's capability.

(5) Decontaminating all objects or areas contaminated during an accident, within the team's capability.

1-6. Training

a. Each service is responsible for training its own personnel for technical escort operations. However, the Department of the Army has the responsibility for conducting the formal course of instruction for technical escort personnel for all services. Each service must provide new development items and necessary training aids and materials for the formal technical escort course, and also unit and other service-peculiar technical training as required.

b. In addition to the skills and knowledge pertaining to material for which they are responsible, escort personnel must be trained in their responsibilities to the civilian environments through which their cargoes move. Unlike the technical aspects of their duties, civil affairs cannot be reduced to specific methods or qualitative rules. A few principles must be emphasized.

* (1) If an accident should occur, civilians in potential hazard areas may number many thousands.

(2) Fear of an accident may influence civilian conduct far beyond rational expectation of risk.

(3) Agitators (sometimes well-intentioned) may mislead the public prior to or during a cargo movement or interfere with appropriate measures after an accident.

(4) Escort personnel must be trained to expect and prepare for civil affairs during their performance of duties. If they are unprepared, their problems will be multiplied—perhaps to a point that satisfactory solutions become almost impossible.

*c. Technical escort training is conducted for all services at the US Army Missile and Munitions Center and School, Redstone Arsenal, Alabama 35809.

CHAPTER 2

ORGANIZATION

★(STANAG 2143, 3327, 3400, 3571)

Section I. INTRODUCTION

2-1. General

Each service has different technical escort requirements; consequently, the technical escort organization of each varies. Requests for technical escort services are covered in section II of this chapter. In general, the technical escort organization for each service is as follows:

a. Army. Army technical escort services are provided by the Technical Escort Center at Edgewood Arsenal, Maryland, with subunits located at Rocky Mountain Arsenal, Denver, Colorado, and Newport Ammunition Plant, Newport, Indiana. The Center is assigned both chemical and explosive ordnance disposal (EOD) personnel to accompany shipments of hazardous material.

b. Navy. Navy technical escort services are provided by Explosive Ordnance Disposal Group, Atlantic (EODGRUTWO) located at Fort Story, Virginia, and Explosive Ordnance Disposal Group, Pacific (EODGRUONE) located on Oahu, Hawaii. All Navy technical escort personnel are EOD-qualified and thus have a "rendering safe" and disposal capability.

c. Air Force. Air Force technical escort services are provided by the Air Force Logistic Command (AFLC) with headquarters at Hill Air Force Base, Utah (DSYT). Air Force technical escort personnel are not EOD-qualified nor will EOD personnel normally accompany shipments. EOD personnel will, however, be alerted and on a standby basis to be called to the scene of the accident-incident when their services are required.

d. Marine Corps. Technical escort services are provided each Fleet Marine Force by technical escort personnel assigned to the Ammunition Company, Force Service Regiment. These ammunition companies are located at Camp LeJeune, North Carolina; Camp Pendleton, California; Camp Hague, Okinawa; and in combat areas. Marine Corps technical escort personnel are not EOD-qualified. EOD personnel will normally be utilized on an "on-call" basis.

2-2. Basic Team Organization

Generally, the individual team organization is determined by the size, mode of transportation, distance, and complexity of the mission. The availa-

bility of personnel and transport space also have influential effects. The criteria for determining the team size vary by service policies and are normally determined by several factors. Some of the factors determining the team size and organization are—

a. Mode of Transportation. The availability of railroad guard cars, highway escort vehicles, berthing space aboard ship, and space available aboard aircraft can physically limit the number of personnel that can accompany a shipment. The team organization and size must take into account the requirement for additional accommodations.

b. Amount of Material. Generally, large amounts of hazardous material would require additional technical escort personnel. For example, 100 loaded rail cars would require several guard cars of technical escort personnel spaced throughout the train as opposed to a small shipment requiring minimum escort personnel.

c. Length of Mission. The hours that escort personnel are actually involved in security, surveillance, and the like may also determine the size of the escort team. For example, a short one- or two-day mission could be accomplished with a minimum of personnel working long hours; but a cross-country mission, or one requiring a long period of time, would necessitate planning for additional personnel to allow for the adequate rest required to maintain the high degree of alertness demanded of technical escort personnel.

d. Material Escorted. The hazard of the agent involved and the different degree of monitoring procedures required for different agents could also determine team size and organization. In addition, the condition of the material to be escorted is a major planning factor; i.e., old and obsolete leaking munitions require many more personnel than a shipment of new chemical munitions.

e. Two-Man Rule. The two-man rule requires the presence of two authorized personnel, each capable of detecting incorrect or unauthorized procedures with respect to the task to be performed and familiar with applicable safety and security requirements. Two authorized personnel shall be considered to be present when they are in a physical position from which they can positively

detect incorrect or unauthorized procedures with respect to the task and/or operation being performed. When application of the two-man rule is required, it shall be constantly enforced by the personnel who make up the team, both while they are accomplishing the task or operation assigned

and until they leave the area which permits access. The security force shall assure that no lone individual is permitted in a limited and/or exclusion area unless he is further controlled by technical escort personnel.

Section II. MISSION PLANNING

2-3. Escort Service

The information necessary to obtain technical escort service should include as a minimum the data outlined in paragraph 2-4. Requests for technical escort service should be forwarded to the individual service as follows:

** a. Army.*

Commander

US Army Technical Escort Center

Aberdeen Proving Grounds, Maryland 21010

Requests should be received not less than 7 days before the desired shipping date for CONUS shipments and not less than 60 days for shipments outside CONUS. Emergency requests may be teletyped or telephoned, followed by confirmation in writing (AR 740-32).

b. Navy.

(1) *Pacific area.*

Commander Mine Force

US Pacific Fleet

US Naval Station

Long Beach, California 90801

Copy to: Commanding Officer

EOD Group—Pacific

EPO San Francisco 96611

(2) *Atlantic area.*

Commander Service Force

US Atlantic Fleet

Norfolk, Virginia 23511

Copy to: Commanding Officer

EOD Group—Atlantic

Fort Story, Virginia 23459

Requests should be received 30 days in advance if practicable but, in an emergency, no less than 7 days before the desired shipping date.

c. Air Force. Major commands not possessing technical escort capabilities will forward requests to—

OOAMA (DS)

Hill Air Force Base, Utah 84401

with information copy to—

Headquarters, Air Force Logistics Command (MMW)

Wright-Patterson Air Force Base.

Ohio 45433

Requests should be received 30 days in advance if practical; but in emergency, not less than seven days before the desired shipping date for CONUS

shipments. Requests for outside CONUS shipments should be received 60 days in advance of shipping date; under expedited conditions not less than 21 days advance notification is required.

d. Marine Corps.

Commandant of the Marine Corps

(Code AO4F)

Washington, DC 20380

Requests should be received 30 days in advance if practical but, in an emergency, not less than 7 days before the desired shipping date.

2-4. Request for Escort

All technical escort requests should include the necessary data to allow the technical escort unit sufficient information to begin the initial planning phase for the mission. The information in appendix B can be used as a guide. As a minimum, the request should include the following:

a. Items and quantity to be shipped to include—

(1) Agent, if applicable.

(2) Munition, if applicable.

(3) Shipping dimensions (length, width, and height).

(4) Weight (net and gross).

(5) Type of container.

(6) Security classification of shipment.

(7) Mode of transportation desired.

b. Pickup point and destination of shipment.

c. Name of individual(s), with title(s), and telephone numbers, to contact at pickup point and destination.

d. Date shipment will be ready for consignor.

e. Date shipment is desired by consignee.

f. Special requirements placed on shipment by consignee.

g. Fund citation and authority to obligate funds in an amount sufficient for travel and other expenses incident to the escort service requested.

2-5. Shipments Requiring Escort

As outlined in AR 740-32, shipments requiring technical escort include—

a. Class A poisons (excluding nerve agents, biological materials, and potential chemical agents under development) except for separate shipments of quantities not exceeding in volume the

space occupied by 100 pounds of water (1.6 cubic feet or 11.9 gallons). Approved DOT containers or military containers which equal or exceed the specifications of DOT containers must be used.

b. Nerve agents (e.g., G or V) and potential chemical agents under development, except for a separate shipment of one toxic gas identification set or one laboratory sample not exceeding one liter in volume. Approved DOT containers or military containers which equal or exceed the specifications of DOT containers must be used.

c. All etiological materials (except diagnostic specimens and etiological materials with 500 milliliters or less in the primary containers) pro-

vided the total quantity in any one vehicle, aircraft, or other conveyance does not exceed 3 gallons. The shipping agency will provide an effective decontaminant for those materials resistant to standard-type decontaminants used by technical escort personnel.

d. All radioactive materials which require a DOT waiver or special permit for shipment.

e. Materials which the commanding officer of an installation or transportation agency decides is necessary and in the best interests of the Government to move, because of inherent factors of public relations, security, economics, and degree of hazards involved.

Section III. THE MISSION

2-6. General

Road escort requirements can usually be expected in conjunction with shipment of dangerous materials by other transportation modes as well as for shipment exclusively by road. Regardless of the mode of transportation, the escort team must be trained to assume responsibility for the cargo from the moment it is received to the time it is released to the consignee at the destination. Likewise, several other activities must assume certain responsibilities in preparing, shipping, and receiving the cargo.

2-7. Escort Team

Upon reporting for a shipment, the Technical Escort Team should consider many checkpoints before departing with cargo. Initially, the team

must be prepared for the mission. It must have all supplies, equipment, and the number and quality of transporting vehicles necessary for the mission (app C). Further, it is recommended that the team ascertain that the following actions are completed.

a. Before Escort.

(1) Each cargo vehicle is properly placarded in accordance with DOT regulations.

(2) The shipper has certified on the shipping order or bill of lading that the articles have been properly described, classified, packaged, marked, and labeled, and are in proper condition for transportation, in accordance with applicable DOT regulations (fig 2-1).

(3) The cargo vehicle has been inspected (road) or certified (rail) if carrying Class A explo-

This is to certify that the above named articles are properly classified, described, packaged, and marked, and are in proper condition for transportation, according to applicable regulations of the Department of Transportation.

Signature _____

Printed Name _____

Position/Grade _____

Organization _____

Address _____

Phone No. _____

Date _____

Figure 2-1. Shipper's certificate.

sives.

(4) The blocking and bracing of the cargo has been certified in accordance with regulations.

(5) The blocking and bracing of the cargo conforms with Bureau of Explosives (BoE) approved drawings.

(6) When seals are used, the compatibility of the cargo is in accordance with DOT regulations, if mixed cargo is transported (app D).

(7) The cargo compartment seal number corresponds with that on the bill of lading, when necessary.

(8) All cargo is accounted for and a report is made to the home unit on the status of the mission: Time of anticipated departure and anticipated time of arrival at destination, condition of cargo, and status of personnel.

(9) Adequate protective supplies and equipment for crewmen of the operating transport are provided.

b. During Escort.

(1) The team's technical efficiency and morale are maintained during the mission.

(2) Scheduled stops are made or messing facilities are operated aboard the rail guard car as required.

(3) Sufficient walking guards are maintained to insure observation of all approaches to the cargo at all layovers.

(4) Surveillance is maintained by observation or testing, or by checking the seal on the cargo during scheduled and unscheduled stops.

(5) The cargo is inspected frequently to assure that any dangerous situations which may result in an accident are promptly corrected.

(6) A daily log is kept of actions occurring during the mission.

(7) Inspections of the cargo are regulated according to special permits and DOT regulations.

c. Conclusion of Escort.

(1) The cargo is inspected and inventoried before it is released to the consignee.

(2) Assistance is rendered to the consignee, if requested.

(3) Arrangement is completed for the return trip to the home organization or for routing to assume another mission, if necessary.

(4) An after-action report is completed upon return to duty at the parent organization.

***2-8. Military Traffic Management Command (MTMC) (AR 55-355)**

a. MTMC operates as the traffic manager and terminal operator for all military services. It supervises all functions incident to effective and

economical procurement and use of commercial freight and passenger transportation service, including ocean terminal operation within CONUS.

b. In addition, in accordance with responsibilities identified in Joint Service Regulations AR 55-80 and AR 55-162, MTMC operates as the DOD-designated agency to represent the DOD in coordinating all matters pertaining to public highways, including defense utilization of public highways, with civil and other appropriate highway authorities.

c. MTMC insures that requirements of Federal, state, and other regulations as well as military regulations placed on shipments of explosives and other hazardous material are met by the military services. It is further responsible for obtaining commercial transportation for military shipments and for routing these commercial shipments of hazardous materials. Working with the installation transportation officer (ITO), and with Federal and state officials when appropriate, MTMC provides valuable assistance in shipment planning.

2-9. The Consignor

The installation transportation officer is the consignor on all shipments from an installation. The shipping activity (accountable officer) provides the material to be shipped, packed, and labeled in accordance with pertinent regulations. The installation transportation officer as consignor must assure himself that material is properly marked, described, labeled, and loaded in accordance with applicable regulations and tariffs. The escort team may also check several areas or functions previously performed by the shipping activity only, to ascertain to its satisfaction that the cargo is adequately secured for a safe trip. The shipment can be rejected because of shortcomings noted in the shipper's performance of duty. Recommendations made by the escort team must be considered in order to avoid possible damage to cargo while in transit. The responsibilities of the shipper include—

a. Loading, blocking, bracing, and placarding cargo; certifying classified cargo and sealing the cargo compartment, when necessary.

b. Obtaining the rail guard car, and assuring the working condition of appliances and the cleanliness of shelter.

c. Certifying all shipping containers used and the cargo when loaded from installation facilities and by installation personnel.

d. Inspecting the cargo vehicle and initiating appropriate inspection forms, when required (app

E).

e. Briefing vehicle-operating personnel and initiating appropriate Department of Defense (DOD) forms, when applicable.

f. Furnishing the Technical Escort Team and vehicle drivers with the necessary documents concerning the cargo, including the US Government bill of lading (Standard Form 1103), when applicable.

2-10. Consignee

The installation transportation officer, as the receiver, must verify the forecasted arrival date and time of the shipment. He must insure that qualified personnel are available to accept the cargo.

a. Personnel must be capable of evaluating any deficiencies noted and initiating the appropriate documents reporting these deficiencies.

b. Personnel will be required to unload cargo and possibly decontaminate and release the carrier's vehicle and equipment which may have become contaminated during shipment and later decontaminated. The previously decontaminated vehicle must be further certified as being safe for subsequent use by unprotected personnel.

c. The Technical Escort Team must be assisted in reconditioning the rail guard car before release. Personnel handling housekeeping expendable supplies and equipment will be a great help in this operation.

*d. Guides must be provided to direct the Technical Escort Team with shipment to the exact offloading area when delivery is made during the normal working day. This will avoid congesting traffic and creating potentially hazardous situations.

*e. When the cargo arrives during nonduty hours, or hours of darkness, the use of guides is a necessity for safely directing the team to the offloading site or designated holding area. If receiving personnel cannot be made available and the cargo must remain in custody of the escort team until the consignee can receive the cargo. Living quarters near the holding area will prove helpful to the team. If this is not feasible, transportation for the team between quarters and the holding area would be adequate.

2-11. Road Escort

The Technical Escort Team has complete jurisdiction over the shipment with the exception that the team has no jurisdiction over vehicles or drivers contracted by the US Government unless the contract so specifies. In a situation such as this, the team advises the vehicle operator only on those matters pertaining to the safety and secur-

ity of the cargo. In preparing for the mission and in accepting the cargo, the teams should use checksheets to insure that all pertinent points are carefully checked before departure.

a. *Road Operations.* Two drivers should be assigned to each vehicle in the convoy and the prescribed protective equipment placed in the cab of each. Daily driving should be adjusted to the requirements of the particular mission, but whenever possible it should be limited to the military standard of 300 miles per day or 8 hours driving time, whichever comes first. Prior to departure, the team will insure that—

(1) There is adequate dunnage and cargo tie-down for each vehicle.

(2) Communication is established between vehicles.

(3) Safety inspection is performed on each cargo vehicle, prior to acceptance of the cargo.

(4) Copies of DD Form 626 (Motor Vehicle Inspection) and 836 (Special Instructions for Motor Vehicle Drivers) are properly completed and in the possession of each vehicle driver (app E and G).

(5) All drivers possess a current and valid operator's license for the vehicle and for cargo being transported.

(6) All cargo vehicles are properly placarded.

★(7) All drivers and team members are knowledgeable about regulations and load restrictions for each state through which the convoy will pass.

(8) All drivers and team members are aware of predetermined rest locations, convoy speed, and final stop at the end of the day.

(9) The escort kit contains protective gear and equipment to meet emergency situations.

b. *Surveillance and Security.* The cargo vehicle must be under surveillance at all times. This can be accomplished by placing a team member in the cab of the cargo vehicle, following the cargo vehicle with the escort vehicle, and placing sufficient guards to provide complete coverage of all approaches to the cargo vehicles during stops. The cargo should be inspected prior to convoy movement, at scheduled and unscheduled stops, and at the completion of the day's travel. All inspections will be conducted by a minimum of two persons outfitted in prescribed protective clothing. Vehicles' exteriors will be checked for signs of agent leakage. Interiors, if accessible, should be checked. Prior to inspecting vehicle cargo, available live detectors will be checked; and, if deemed necessary, tests will be made for agent presence using detection paper or kits. Cargo tiedown, chocking and bracing, and vehicle

placards will be checked to assure stability and safety during transportation. Additional security considerations are contained in chapter 6, section II.

c. *Convoy Operation.* Convoys must be escorted by the minimum number of vehicles required by the states through which they must pass. For instance, one vehicle is required to lead the cargo and another vehicle to trail the cargo. When close control is required it is recommended that one escort team member be placed in every third vehicle. If the convoy becomes separated and no radio communication is being used, the escort team parent unit and the CONUSA movement monitor (para 3-2b) will be called upon to act as the control center for reuniting the convoy vehicles.

d. *Vehicle Repairs.* When a vehicle becomes disabled on a public highway, warning signals should be displayed immediately; the nature of

the trouble should be determined, then promptly corrected. Primary consideration should be given to prompt repair of the vehicle. If necessary, the vehicle should be removed to a location where it will not interfere with the normal flow of traffic. The selected area should provide ample space for regulation parking.

(1) Based on existing circumstances, repairs should be made by the driver with or without local civilian assistance. Where Government trucks are involved, assistance may be requested from a military installation if one is located within a reasonable distance. This provision does not apply to common carriers except that assistance may be extended under unusual circumstances or emergencies, to protect life or property or to expedite the delivery of war materials.

(2) If complete repairs cannot be accomplished within a reasonable length of time and the vehicle can be moved, it should be taken to a

military installation where the shipment can be transferred to another vehicle. If a military installation is not located within a reasonable distance, the vehicle should be moved to an isolated location where the load can be transferred with the least possible hazard to life and property. The transfer of the cargo from one vehicle to another at the location of disablement must be accomplished as rapidly and as safely as possible.

(3) No repairs should be made to the vehicle unless such repairs can be made without hazard to the shipment; and no repairs to a loaded vehicle should be made in a garage.

2-12. Rail Escort

The Technical Escort Team accompanying a shipment has complete jurisdiction over the cargo except that the team has no jurisdiction over the train crew or the train's operation. The escort and guard duty begins when the team receives a shipment from the consignor and continues until the team is properly relieved by the consignee.

a. Personnel. The number of personnel to accompany a rail shipment depends upon the number of freight cars in the shipment. A commissioned officer should be in charge of the operation. At least one person will be capable of operating the generators located in the guard cars. Other qualified persons should be assigned additional responsibilities as cooks, hygiene specialists, and the like.

b. Protective Equipment. Adequate protective clothing, first aid supplies, and detection, repair, and decontamination equipment and supplies will accompany the shipment and should be available to the team at all times. The Technical Escort Team should ascertain that the escort kit contains protective equipment for the train crews. Each rail car must also meet minimum safety standards prior to being loaded with hazardous material (app F and G).

c. Transportation Facilities. Rail cars are furnished the escort team at point of origin, which are intended for use as a housekeeping facility during the shipment. The team will inspect each car for serviceable condition and cleanliness upon its receipt. Team members will become thoroughly familiar with all safety procedures related to the use of the car and note any deficiencies. A complete safety orientation will be given by the team OIC-NCOIC on procedures employed in the use of a car prior to its occupancy. The car can hold nine persons, but it comfortably

accommodates only six individuals. Water and provisions should be stocked prior to departure since it is normally difficult to obtain food stock while en route. The team SOP should include operation instructions for the car. At the completion of the mission, the car must be policed and left in a serviceable condition.

d. Rail Operations. Rail cars containing hazardous material or poison gas must not be cut off while in motion. This is referred to in railroad language as "humping." Interference with train operations or schedules must be avoided except when emergency conditions exist. The train crew and authorized government or railroad inspectors are the only persons authorized to approach and inspect cars under guard of the escort detail. In all cases, the escort team will require these personnel to show proper identification certificates. These authorized persons may open the cars in the presence of the escort team representative for inspection (except for classified shipments), after which the car will be closed. The door should be resealed to provide an indicator that unauthorized entry has not been made (fig 2-2). Each change of seals should be included in the log. At all other times, when the train is stopped personnel will be posted to prevent unauthorized entry or unauthorized tampering with cars. If a broken seal is found, the cargo and carrier will be inspected for evidence of theft and/or sabotage. Such incidents will be reported to the home unit and the CONUSA movement monitor and included in a detailed report.

e. Surveillance. Short routine inspections of the exterior of the cars should be conducted by members of the escort team at all stops, especially after the switching has been completed. Leaking munitions or shipping containers (leakers) may be discovered by visual inspection of the cargo or testing by approved methods.

2-13. Air Escort

The Technical Escort Team accompanying an air shipment has complete jurisdiction over the cargo, but the team has no jurisdiction over the air crew or the operation of the aircraft. Escort responsibilities commence with the team's acceptance of the cargo and continue until the team is properly relieved of all associated responsibilities.

a. Personnel.

(1) The number of escort personnel assigned to accompany an air shipment will depend

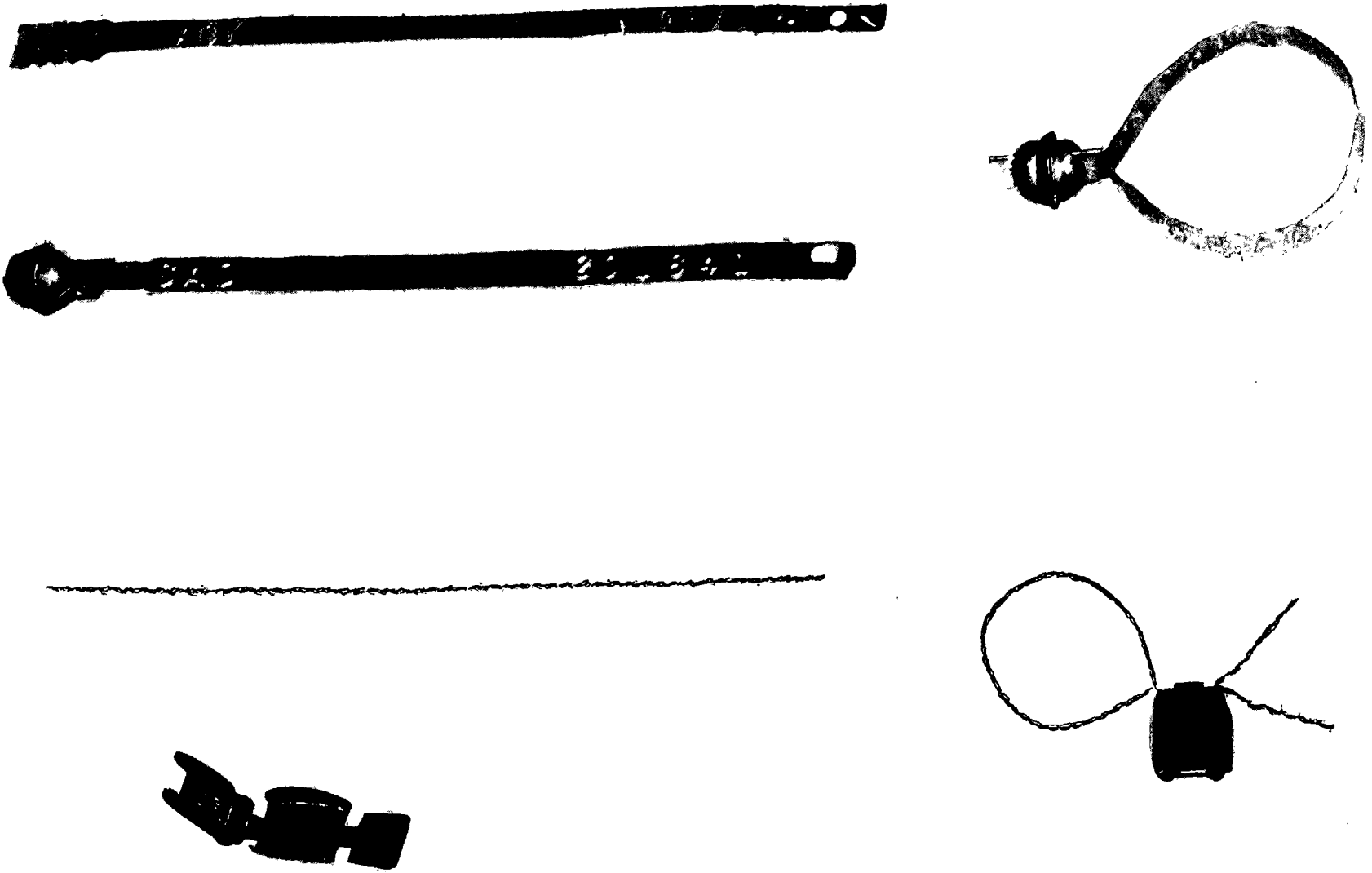


Figure 2-2. Transportation vehicle seals open (left) and closed (right).

specifically upon the quantity of material to be escorted, the size of the aircraft, and the duration of travel. A minimum of two escort personnel are required to accompany each aircraft carrying hazardous cargo.

(2) The escort team must ascertain that all members of the flight are equipped with the proper protective equipment and are proficient in its use. The team can normally expect an air crew of three on LOGAIR flights, and a crew of about six on other military flights.

(3) The escort team will brief all personnel on the flight concerning the cargo and emergency procedures (para 2-16). The team leader will obtain a signed statement from the aircraft commander attesting that the briefing was made and was clearly understood (fig 2-3).

(4) The escort team kit should be located in the aircraft cargo compartment, accessible to the entire team. It should include appropriate protective, first aid, detection, repair, and decontamination equipment and supplies.

b. Flight Operations. While loading, appropriate placards and signs denoting the nature of the material being loaded must be properly displayed on the aircraft or on stands around the aircraft (chap 9, AFM 127-100). The aircraft commander, having been briefed as to the nature and hazards of the cargo, will consider the advice of the Technical Escort Team during inflight operations.

c. Cargo Tie-Down. The aircraft loadmaster is responsible for proper cargo tie-down. Escort personnel should be present during loading and unloading operations to lend technical assistance and insure proper handling of the cargo. Loading and unloading of the cargo should take place away from congested areas of the airport or airbase.

d. Surveillance.

(1) The escort team and designated crew members are the only personnel authorized to inspect hazardous cargo during flight. Air crew members desiring to inspect the cargo tie-down must do so under the supervision of escort personnel. The cargo should be inspected prior to take off, immediately after take off, during flight, after significant air turbulence, and immediately after landing.

(2) All cargo inspections will be accomplished by a minimum of two persons outfitted in the prescribed protective equipment. Cargo will be inspected to insure that no shifting or movement has occurred that could result in an accidental release of agent.

* (3) If agent leakage is found, all personnel aboard the aircraft will be advised to don

protective equipment. The escort team will initiate the applicable emergency procedure necessary to prevent further escape of agent.

2-14. Sea Escort

The Technical Escort Team accompanying a sea shipment has technical responsibility for the safety of an operation involving the shipment. However, since the captain of the ship has complete authority over any operation which is conducted aboard his vessel, any final action must be approved by the captain or his chief mate. The team has no authority over the ship's crew or the ship's operation; the master of the vessel has complete jurisdiction over the vessel, its operation, and crew. Several escort teams varying in size may be involved in a sea escort mission; e.g., one team may be required to pick up and escort the shipment to the port of debarkation; another team may make preparation at the port to accommodate the shipment; and a third team may be required to escort the material to the oversea port of embarkation. This arrangement provides for more flexibility when the escort mission may take a long time.

a. Personnel.

(1) The size of the escort team is generally determined by the size of the shipment and the hazard involved. Team size may vary from 2 to 20 or more persons. The advance party assigned the duty of coordinating transportation for the sea escort phase is usually the smallest, sometimes consisting of only one or two individuals.

(2) The escort team accompanying the shipment to the port will be available to advise supervisory personnel on the proper safety procedures to be employed in the handling of chemical cargo when the cargo is at the port.

(3) The on-board ship team responsibilities commence upon arrival at the designated port of debarkation.

(4) While hazardous cargo is being loaded and unloaded, the escort team will advise the ship's captain as to the emergency equipment required at the site, and will, with the captain's permission, restrict the flow of personnel in the area.

**b. Preloading Responsibilities.* Prior to loading, the escort team will brief the ship's captain as to the nature of the cargo, necessary safety and security measures, and the need for equipment storage space aboard ship; and will make liaison with appointed ship officers concerning off-limit areas, ship policies, quarters, mess, laundry, and recreation facilities. The team leader will insure that all equipment including

DATE _____

FLIGHT _____

This is to acknowledge that I, the aircraft commander, and my crew have been briefed by _____ of the USA Technical Escort Center on the nature of the mission. The security classification is _____, the cargo is _____, the cargo hazards are _____, protective equipment is _____, and the decontaminant is _____; also, the standing operating procedure, authority, and capability of the escort team have been explained. I have been informed of the following logistical requirements _____

NAMES OF CREW

NAMES OF ESCORT TEAM

Signature of Aircraft Commander_____
Printed Name*Figure 2-3. Aircraft commander's briefing acknowledgment.*

animals for a live alarm system are on board prior to loading and that all emergency equipment is easily accessible. An emergency command post must be set up to permit communications with all holds and levels where operations will be in progress. The Technical Escort Team will give safety training to the ship's crew at least two days prior to loading and will also participate in normal ship's damage control training at this time. The stow plan must be approved by the ship's captain prior to loading.

c. *Surveillance.* The ship's cargo will be inspected at the direction of the ship's captain, but preferably a minimum of twice daily. When surveillance is conducted, live detectors located in exhaust system ventilators will give a general indication if a leak has occurred during the period of absence. The condition of the hatch seal will show if any forced entry attempts have been made. The status of communications with the command post and all other subpoints will be of vital importance if a leak occurs. Before entry into the hatch, appropriate protective equipment must be donned. Upon entry, the door seal should be removed and checked, and the status of live detectors inside the hold should be checked. Three persons are required to inspect the cargo. One inspector should remain outside while the other two check the cargo. While inside the hold, the inspectors should check the blocking and bracing, determine the existence of loose cargo or loose lumber, and then inspect the cargo for breakage or shifting. Finally, they should replace the hatch seal and record the seal number, time of inspection, and condition of the cargo. The escort team will be accompanied by a ship's officer at all times during inspection of cargo holds unless this requirement is waived by the ship's captain.

d. *Notification.* The escort team will make daily reports to the ship's captain as to the condition of the chemical cargo and will advise him as to problem areas. Any repair of cargo holds or modification to the stow plan must have his prior approval.

2-15. Communications

*While conducting an escort mission, the escort team must have established a communications system. The type of communications recommended may consist of visual signal, wire, radio, or a combination of these. The type of communications used will in many instances be dictated by the mode of transportation. Whatever system is selected, the Technical Escort Team leader must ascertain that all team personnel thoroughly understand and are proficient in its use. The mini-

mum communication requirements for a movement of chemical materials are as follows:

a. Adequate intramovement (highway or rail) communication.

b. Sufficient telephone sets self-contained to permit maximum telephonic contact with state and local law enforcement agencies in event of an emergency.

c. Periodic telephonic contact with the proper CONUSA movement monitor.

2-16. Transport Crew Briefing

Before departing on the escort mission, the escort team leader must brief the operator and crewmen of the transport on the nature and hazards involved with the cargo. Adequate information must be given to aid the operator in charge in making accurate decisions during emergencies. As a minimum, the briefings must include—

a. *Location and Type of Hazardous Cargo Involved, and the Position and Status of the Cargo in the Transport.* The hazards of the cargo must embrace the type, physiological effects, and its portal(s) of entry into the body.

b. *Security, Classification, and Proper Handling Procedures.* The security classification of the material being escorted must be known by all personnel. Proper handling may include the use of the "left-hand procedure" (Joint Service Regulation AR 95-27) when applicable; a determination that the cargo may or may not be jettisoned, and specific limitations involved; and other special handling precautions which might directly affect the purity or condition of the shipment.

c. *First-Aid and Self-Aid Procedures.* Personnel should be briefed on recognition of symptoms on exposure to the contents of the cargo. First aid, self aid, and the use of protective clothing and equipment should be explained and demonstrated.

d. *Emergency Reaction Procedures.* A detailed explanation should be given about the mission of the team if a leaker is discovered. During this explanation actions should be outlined that all non-team personnel must perform to minimize confusion, thus aiding the escort team in completing its functions. What information may or may not be given to the civil populace or news media should also be outlined. The name or title of the individual authorized to make the news release will be furnished. Reference should be made to example comments contained in appendix H.

e. *Final briefing.* A final briefing will be given to the escort team by the senior Navy safety officer or the ship's 1st mate as to the restrictions and methods of operation to be used in the cargo

holds. This briefing will include a detailed explanation of fire fighting equipment, ventilation system, cargo escape routes, drain systems in the hold, and any other important details necessary

to prepare the escort team to care for the chemical cargo, as well as the sequence of operation to be followed in case of a major accident (collision or fire).

CHAPTER 3

EMERGENCY PROCEDURES

★(STANAG 2143, 3327, 3400, 3571)

*Section 1. CHEMICAL ACCIDENT/INCIDENT CONTROL

3-1. General

The military services take all possible measures to prevent a chemical/nuclear accident or incident. However, if an accident or incident does occur, all possible measures must be taken to save life, preserve health, and protect property. The service or agency having custody is responsible for all actions at the scene of an accident involving chemical surety material. However, it is the responsibility of the service which becomes aware of the accident or incident under technical escort to take whatever measures possible within its capability to neutralize, prevent, or limit possible damage or injury pending assumption of control by the responsible service.

3-2. Responsibilities

a. Commander, US Army Forces Command (FORSCOM) is responsible for CAIC activities in CONUS except for installations of other major commands. FORSCOM in coordination with TRADOC will designate the on-scene commander and installation to provide CAIC support. FORSCOM will coordinate the alert, standby, and response of FORSCOM/TRADOC installation CAIC elements to a chemical accident.

b. Installations designated as CAIC are responsible for establishing procedures for receiving and utilizing movement status and progress information involving chemical shipments originating in, terminating in, or traversing their area of responsibility. The installation will appoint the chemical accident and incident control officer (CAICO), Provost Marshal, Staff Judge Advocate, Information Officer, Communications Officer, Engineer Officer, Medical Officer, and Chaplain. Emergency teams available to the CAICO include CBR team, medical team, physical security team and communications team. EOD teams support will be designated by FORSCOM.

c. A chemical accident requires the coordinated efforts of the agency having custody of the chemical material, the major command having CAIC responsibility, and the installation providing CAIC response. It is imperative that

the escort team keep the responsible agencies informed of movement progress and status. This will insure prompt CAIC response and complete coordination of effort.

d. The plans of the major Army commanders normally include the following:

(1) The qualification and method of appointment of the on-scene commander, the chemical accident/incident control officer (CAICO), and administrative assistants.

(2) Hospitals, and administrative specialist support for CAIC operations.

(3) Establishing and training necessary emergency teams.

3-3. On-Scene Commander

Major commanders responsible for CAIC must be prepared to dispatch a general officer to the accident as the on-scene commander. When the on-scene commander arrives at the accident scene, he assumes responsibility for all forces and operations at the scene to include—

a. Security, safeguarding, and disposal of all classified material involved in the accident.

b. Surveys to determine actual and potential hazard areas and actions to minimize the hazardous effects of agents.

c. Public relations with civic groups, public information, and claims and reports resulting from the accident.

d. Requests for required assistance, control, and logistic support of observers and other authorized personnel at the scene.

e. Certification of clearance of contamination from the site, when applicable.

3-4. Chemical Accident/Incident Control Officer

Each commander having CAIC responsibilities will designate a CAICO. He will assume control of all emergency teams at the accident site and supervise operations in the name of the commander. Each CAICO will be qualified by experience or specialist training to coordinate the activities associated with the CAIC. He will be responsible for the duties listed in paragraph 3-3 until relieved by the on-scene commander.

Reaction teams available to the CAICO consist of personnel who are trained in their specific occupational specialty and can render aid as appropriate.

3-5. Explosive Ordnance Disposal Team

The EOD team will, when required, render safe all weapons and advise on evacuation of hazardous items from the scene of an accident or incident. The team commander advises the CAICO on requirements for render-safe procedures and on evacuation of the hazardous chemical material and associated components. He also acts as the CAICO, if he arrives at the scene prior to the CAICO and is senior to the senior serviceman present. Other detailed functions and responsibilities are included in Joint Service Regulations OPNAVINST 8027.1E/AR 75-14/AFR 136-8MCO 8027.1B.

3-6. CBR Team

This team advises on CBR problems, including any requirement for assistance from specialists from Edgewood Arsenal. The team should be capable of arrival at an accident scene within 4 hours, depending on weather conditions. It must be prepared to—

- a. Assist the technical teams in performing their functions.
- b. Determine the extent of hazard and identify the agent involved.
- c. Direct the survey, marking, and recording of the contaminated area; recommend procedures for controlling the movement of personnel and equipment into and out of the contaminated area; decontaminate personnel and equipment; and advise and assist in decontaminating buildings and land surface.
- d. In conjunction with the chemical medical consultant (para 3-7) and technical representatives from other Government agencies, as appropriate, advise the on-scene commander when it is safe for unprotected personnel to enter the area.

3-7. Medical Support

a. A chemical medical consultant, designated by The Surgeon General will be available to the on-scene commander, CAICO, or the commander of a military hospital to advise on chemical health hazards, exposure level criteria, and the best or most appropriate treatment of casualties.

b. Emergency medical teams, formed from resources available to commanders responsible for CAIC, will support CAIC plans.

c. When responding to chemical accidents or incidents, they carry protective clothing and equipment, the medical equipment set for chemical agent casualty treatment, and other medical

supplies necessary for treatment of chemical casualties.

3-8. Military Police/Security Police Traffic and Physical Security Team

The area Provost Marshal or security officer advises on physical security matters and traffic control. He also coordinates with representatives of police agencies and with law enforcement agencies of other services. The traffic and physical security teams assist in securing the area and controlling vehicular and pedestrian traffic into and out of the area. The teams can be obtained through coordination with the local Provost Marshal or Security Officer.

3-9. Public Information

Although the technical escort team has in its possession a prepared news release (app H), the necessity for a trained information officer and personnel depends on the severity of the situation. The information officer advises on information policies and other requirements of general interest to the public.

3-10. Other Technical Personnel or Teams

Other technical personnel or teams may be requested as needed at the accident site. Examples are—

- a. A decontamination team, consisting of personnel trained in the use of special supplies and equipment for rendering a contaminated area safe.
- b. An Aviation team, which may be used mainly to provide transportation of personnel and supplies to and from the site. In isolated areas, this team would be essential.
- c. A Signal team, which may be required to provide and maintain communications and power in the vicinity of the emergency area. Communications and power would be essential to maintain a 24-hour operation.
- d. A legal team (JAG) to settle civil claims against the Government and protect the rights of personnel at the accident site.

3-11. Military Installations

Military facilities throughout CONUS play an important role for the Technical Escort Team during an accident situation. The network of communications available provide for quick notifications of emergency and response to emergency requests. Installations handling or anticipating handling toxic material must plan, train, and keep on a standby basis a disaster-control or disaster-preparedness team for contingency purposes.

a. Any command having physical custody of toxic material is responsible for control, security, and handling, and for insuring that proper maintenance and transport procedures are followed. Installations having reaction teams can provide emergency services and aid during accidents presenting a hazard to both the civil and military populace. These teams must be thoroughly trained to respond properly to hazardous situations involving toxic material. They must be familiar with the responsibilities, role, and location of other reaction teams.

b. In addition to providing emergency reaction assistance, when a capability exists, the installation can assist the Technical Escort Team in other ways. To mention only a few, having a direct communications source and supply stores, the military base can aid in notifying the Army area commander and the technical escort team's parent unit; and can provide decontaminants and other supplies, and transportation.

3-12. The Technical Escort Team

Whenever an accidental release of chemical or biological materials occurs, the immediate tasks of technical escort personnel are controlling contamination, protecting life and property, and restricting admittance to the area. A checklist (app I) will aid the team in ascertaining that all pertinent tasks are accomplished.

a. In protecting personnel in the immediate vicinity, the team must determine if personnel involved are contaminated and require first aid treatment or evacuation. The team must further decide if personnel in the immediate vicinity of the accident must be evacuated because of non-availability of protective devices.

b. Notification of proper authorities in regard to the location of the accident and obtaining appropriate assistance must be initiated immediately. The team should solicit assistance from the most immediate source, the local or state law enforcement agency, parent unit, the Army area commander, the nearest military installation, and other agencies as designated by service regulations and the unit SOP. The commander of the nearest military installation should take such immediate emergency action as may be necessary within the limits of his capability to minimize the initial results of the accident.

c. Assessing the extent of leakage and isolating the leaker is necessary to determine the seriousness of the situation and allow accurate reporting of the accident. Only trained personnel with proper protective equipment will be allowed in the immediate accident area. When the

situation involves both toxic agents and explosives, an immediate exclusion area should be established. If munitions with toxic agents or explosives are endangered by fire, special precautions must be used when working in the immediate danger area.

d. Containment to minimize leakage and contamination should be effected as soon as possible to reduce or stop agent leakage. Techniques for sealing will vary depending on the type of agent, the type of container, and the type of sealant involved (para 3-17). If the hole is very large and most of the agent has leaked out, the container should be closed for shipment to a military disposal site or disposed of at the accident site by chemically neutralizing the agent. Neutralization while at the accident site may be the most rapid method of handling the overall hazard and may eliminate the need for extensive packaging. If the situation does not permit immediate chemical neutralization, package the container for shipment to the nearest military disposal site.

e. All areas known or suspected to be contaminated should be restricted. During the initial survey or reconnaissance of the accident area, the observer must be alert in noting areas of light contamination and gross contamination. Although it is most desirable that the entire accident area be restricted, those areas presenting the most hazard must be given the highest priority because of the size of the escort team. Only authorized personnel with appropriate protective equipment should enter the restricted area. The control of supplies and equipment into and from the area is mandatory. Contaminated items must remain in the restricted area until declared safe by decontamination personnel.

f. Decontamination and disposal should be performed as required. The amount of decontamination a technical escort team is capable of performing during an emergency will vary depending on the size and extent of contamination, agent properties, weather, surface contaminated, decontaminants, and method of decontamination. Areas presenting the most hazard to personnel and operations should be given the highest priority for decontamination.

g. The technical escort team leader will brief the CAICO upon his arrival at the scene and then assist the CAICO in the on-scene operations.

3-13. Civil Law Enforcement Agencies

State and local law enforcement personnel can be of immediate assistance to the technical escort team. These personnel are not only trained in techniques of enforcing the law but they are also

knowledgeable in handling people and initiating emergency first aid measures. Having an immediate communication facility, these agencies can be used to rapidly notify and request aid from local public health personnel, medical personnel, and needed emergency facilities. Law enforcement personnel can also assist in notifying the nearest military activity, directing traffic, evacuating personnel from the accident area, and controlling personnel in the accident area.

Section II. CONTAMINATION CONTROL

3-15. General

Repair and decontamination of leaking munitions and shipping containers are a primary technical escort field of interest. Permanent repair of leaking munitions or containers is not within the scope of the team responsibility or capability. Only such repairs as will cause the least delay to the shipment while assuring public safety will be made. Decontamination of any released agent must be thorough in order to avoid subsequent injury to personnel. Decontamination operations should be carried out in accordance with TM 3-220, or recommendations of the shipping agency. Testing following each decontamination effort should be performed to insure thoroughness of decontamination and to prevent any unnecessary delay of the shipment.

3-14. Technical Escort Center and FORSCOM Movement Monitor

The parent technical escort center and the FORSCOM movement monitor, once alerted of an accident sustained by a team, must notify designated agencies and maintain current data on the status of the accident situation. The center should promptly notify the consignor, the consignee, and other concerned headquarters in accordance with service regulations.

3-16. Leak Suppression

The best method for sealing a leaking munition or shipping container will be determined by the situation or circumstances at the time. The technical escort team can only anticipate the type of leak-sealing material required for a mission based on the type and nature of munitions or shipping containers being escorted. These munitions and containers have been engineered and packaged to prevent leakage; however, during manufacture, it is possible that welded seams or lamination may contain voids, or fittings and connector joints were not properly torqued. Vibrations experienced during transportation could work fittings loose or fracture welds, resulting in slight leakage. This type of leakage can normally be stopped by rotating the item so that the leak is

oriented above the liquid level and initiating further leak-suppression methods. The leak can then be repaired by tightening the fittings or joints or by wrapping seams or areas of lamination voids with wet plaster of paris gauze or strips of fiberglass saturated in resin or other suitable sealant material (para 3-17).

a. Leaks occurring around valves or safety plug, e.g., 1-ton containers, sometimes can be stopped by tightening or replacing the faulty valve or plug. When the leakage is stopped, the package should be encapsulated, if possible, in a sealed container for movement to a disposal or repair area.

b. Major accidents could result in large ruptures, gashes, or punctured holes in an escorted item, causing extensive leakage of the contents. These large holes can be repaired temporarily after rotating the item to prevent further spillage. Wooden or brass plugs or rags soaked in an appropriate decontaminating agent should be wedged into the hole. Wet plaster of paris gauze strips, resin-saturated fiberglass, epoxy, or tape should be applied until a firm seal is obtained. Decontaminate the container as necessary. This temporarily repaired package should then be encapsulated in an airtight container, such as an agent-resistant plastic bag or a metal container until final disposition is made.

c. The application of adequate amounts of a freezing or cooling compound will lower the temperature and vapor pressure of all gaseous and liquid agents. This technique will effectively reduce the actual downwind vapor hazard from the leaking munition or container. Either a freezing compound such as carbon dioxide discharge from a fire extinguisher (fig 3-1) or a paste made of solid carbon dioxide and acetone or alcohol applied to the munition can be used. These techniques can reduce temperatures to as low as -100° F. Water, ice, and salt mixtures can reduce temperatures to 0° F. These cooling methods are particularly useful in reducing the temperature of containers of CG, CK, and AC, and are also very practical in reducing vapor hazards from HD and GB.

d. One of the most effective means of coping with a leaker is its immersion in a container of decontaminant. Small items such as bomblets and artillery projectiles may be completely immersed

in a container of decontaminant appropriate for neutralizing the agent contents.

3-17. Sealants

There are many types of material (mostly commercial) available to the technical escort team for use in reducing or completely stopping leaks. These suppression materials may be used in conjunction with plugs of wood, plastic, cloth, or metal to be most effective.

a. *Tape (Masking or Adhesive)*. For relatively small punctures or breaks, leaks can be checked by plugging followed by wrapping the area with tape to keep the plug securely in place and to prevent the seepage of agent around the periphery of the plug. For munitions or containers of small circumference, extend the tape around the entire munition. For larger munitions and containers apply the tape to a sufficient area to allow adequate contact and adhesion to prevent leakage of the agent. Do not attempt to use this method when excessive vapor pressure can build up in the container.

b. *Plaster of Paris Gauze Strips (Bandages)* (Fig 3-2). Plaster of paris bandages are ideal for sealing small cracks or holes, or in conjunction with a plug for larger holes. In either case, the bandages should be soaked in water and then wrapped around the entire munition (container) for best support and to avoid slippage. Bandages are both efficient and easy to use. The average drying time is about 15 minutes.

c. *Epoxy Sealant* (Fig 3-3). This type of sealant should also be used in conjunction with a plug, depending on the size of the rupture. Following the installation of the plug, apply sufficient sealant over and around the patched area to prevent the seepage of liquid or vapor. Epoxy sealants normally consist of two components, a catalyst and a hardener. These components must be handled quickly and efficiently since they set rapidly. Epoxy can also be used to enhance the protection provided by the plugging and taping method of sealing.

d. *Liquid Adhesive Sealants*. A liquid adhesive sealant such as Permatex or Hightack is ideal for sealing large and small openings in munitions or containers. Liquid adhesive sealant, when used to cover a plugged opening, dries very rapidly; consequently, it is capable of being used for quick repairs. Depending on the size of the opening, a plug should be installed. The sealant is then spread over the plug and around the plug-con-

Figure 3-1. Fire extinguishers.

(Located in back of manual)

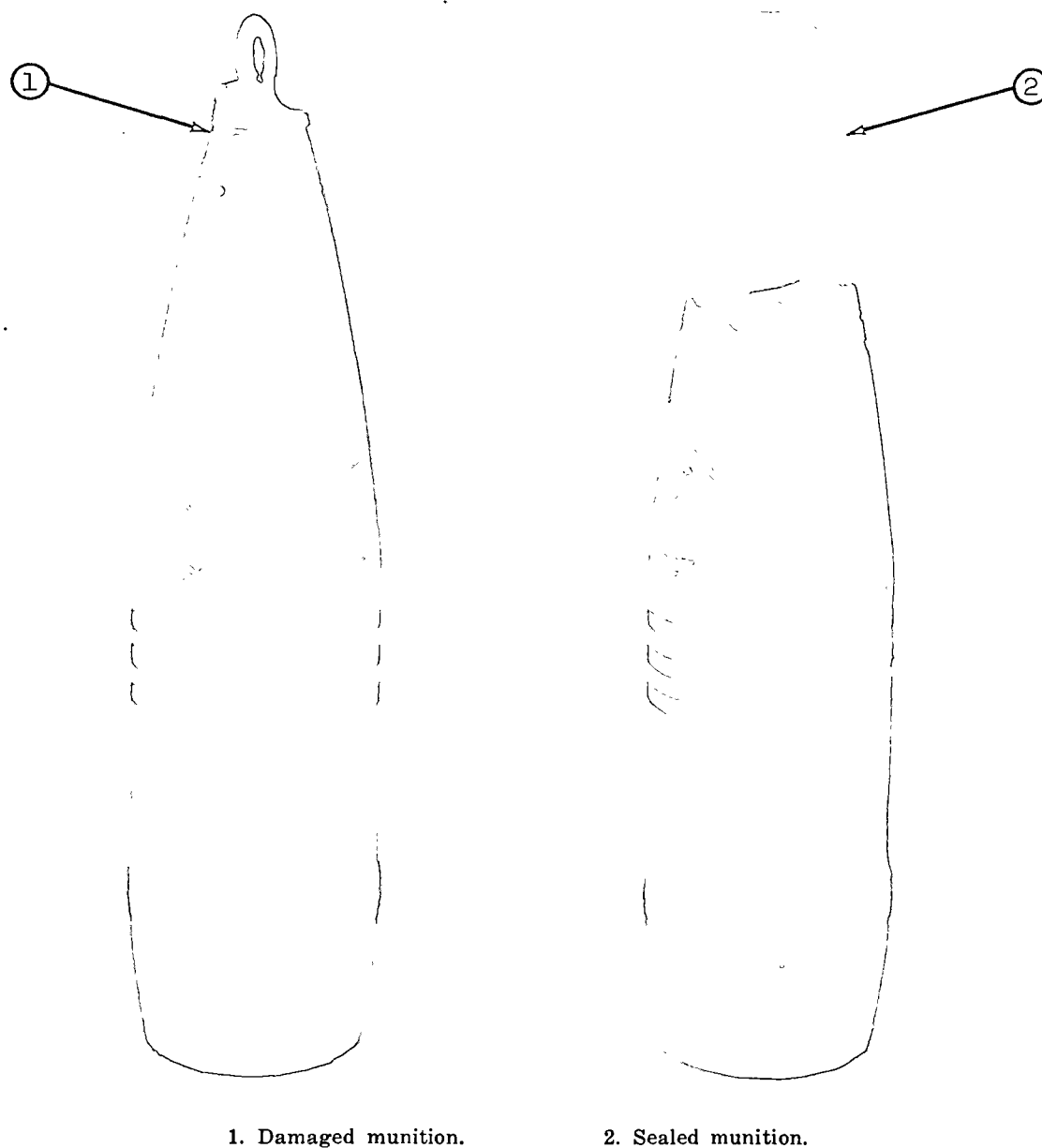


Figure 3-2. Leak sealing artillery projectile by using a plaster of paris bandage.

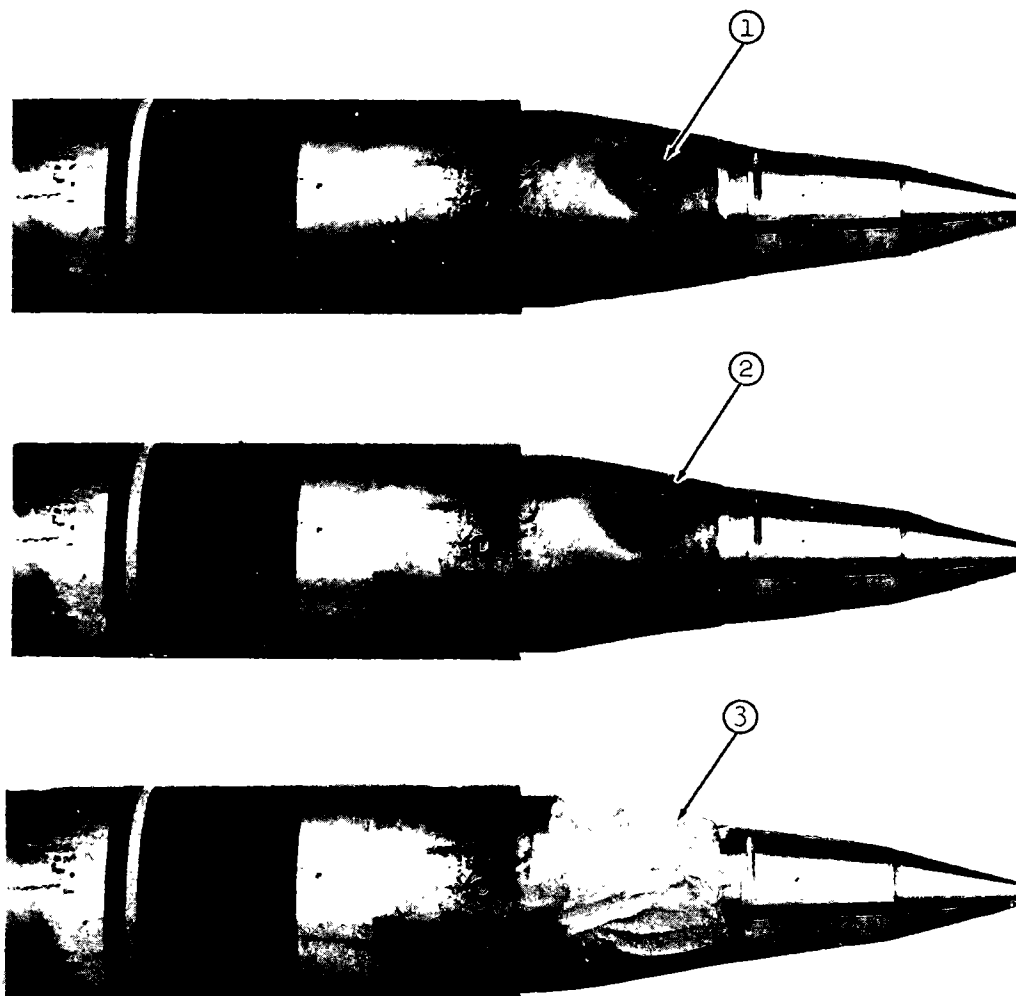
tainer juncture. Liquid sealants are normally flammable and must be used with caution around open flame. Figure 3-4 illustrates a method of sealing a large munition.

e. Solid (Pliable) Sealants. Pliable sealants which can be brushed or smeared are also extremely useful as leak-suppression material. They are best used by first applying around the plug perimeter before insertion into the hole. To insure a good seal, brush or smear, as applicable, the entire plug and around the immediate repaired area with the sealant. This type of sealant is ideal for temporary repair of threaded valve

bases where there is a small amount of agent seepage. It should be applied after all effort has been made to stop the leak by tightening the screw base.

3-18. Secondary Containers

A munition or primary container once sealed by any means previously mentioned can be further sealed by insertion into a second container (fig 3-5 and 3-6) to give additional assurance that no toxics will be released to the atmosphere. The container used may consist of agent-resistant rubber, plastic, or metal. The primary require-



1. Damaged munition.

2. Plug inserted in munition.

3. Hole sealed by using epoxy.

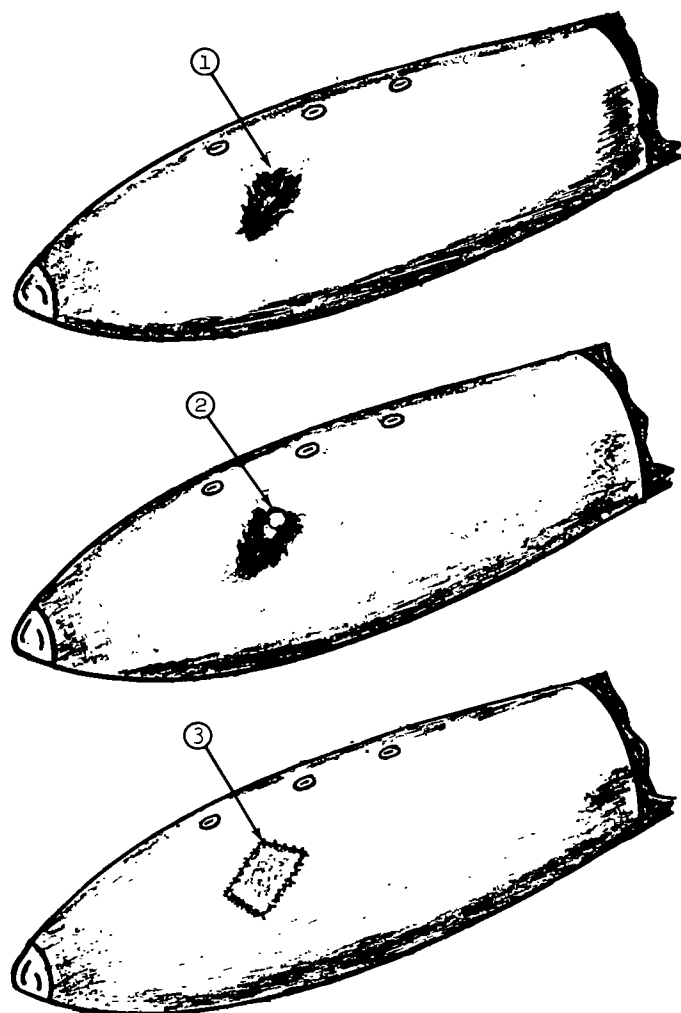
Figure 3-3. Leak sealing by using a plug and epoxy.

ment is that it be resistant to and a barrier against penetration of the CB material. This added method of sealing can be used for a munition or shipping container of any size. A prevalent disadvantage is the transportation of an additional large or bulky container for contingency uses. For small articles such as bomblets and artillery projectiles, this additional safety measure is ideal and practical. A disadvantage exists when plastic or rubberized materials are extremely sensitive to rough handling. When this precautionary means is used, the leaking munition should be oriented inside the container so that the rupture is above the liquid level. An appropriate decontaminant should be placed in the container to

neutralize the escaping liquid and vapor. Munitions with explosive components installed should be containerized with a suitable cushioning material to reduce the hazards of escaping agent and to absorb shock.

3-19. Decontamination

a. Whenever materials are contaminated with hazardous chemical, biological, or radiological products, decontamination is necessary to restore the item or area to a usable status or to allow the item or area to be used safely. All members of the technical escort team must be thoroughly familiar with current decontamination methods and procedures in order to accomplish the mission ef-



1. Damaged munition. 2. Plug inserted.
3. Repaired (sealed) munition.

Figure 3-4. A method of sealing a large munition.

ficiently and in as short a period of time as possible. At an accident site, the escort team must ascertain that all contamination is neutralized or contained prior to transportation of the material to an authorized military disposal site.

b. Before starting a mission, the escort team must ascertain that adequate amounts of an appropriate decontaminant are on hand for use during initial reaction to an emergency situation. There is, however, no absolute method of calculating or knowing the exact amounts of decontaminants, if any, that will be needed or if an accident will occur. The team should stock decontaminants based on previous experience, availability of storage space, the amount of toxic agent being transported, and the transportation mode.

3-20. Methods of Decontamination

Several methods of decontamination have been developed to categorize processes and means of eliminating the hazards of contamination. Although discussed separately, these methods may be used in combinations to complement effects. Each method may or may not be applicable to the elimination of all types of contamination; however, the advantages and disadvantages of each are discussed, based on the type of contamination involved.

a. *Covering.* In an emergency situation, the hazards from contamination can be temporarily reduced by covering. This method allows the team more latitude and time for accomplishing other important tasks in addition to meanwhile reducing the amount of contamination entering the atmosphere.

(1) Small spills on the ground or on roadways can be covered temporarily with earth or other material soaked with decontaminant. Earth will absorb liquid contamination and also reduce the rapidity of vaporization. On hot sunny days, the decontaminant-soaked cover can materially aid in reducing the amount of toxic vapors reaching the atmosphere. Also, dry particulate contamination can be protected from the wind which, even at low speed, can cause secondary aerosolization, thus spreading the contamination over a very large area.

(2) One primary disadvantage of this procedure is that it allows liquid contamination to penetrate deeper into the absorptive media. The technical escort team must, however, weigh all advantages versus the disadvantages when employing this method. Weather conditions and general persistency of the agent (liquid) and location of the accident would directly influence the selection of this method.

(3) Another disadvantage of this method is the time consumed in covering large spills. The escort team, depending on the size of the spill, may not be capable of performing this task. In this event, it may be simpler and more expeditious to proceed with decontamination.

b. *Removing.* Removal does not destroy the agent, but only allows its transfer to another location. The escort team could definitely use this method for all types of contamination if the amount of spillage or the area contaminated is not excessive. Where liquid contamination has penetrated into a permanent absorbing medium, it



1. HEAVY DUTY-PLASTIC MATERIAL FOR WRAPPING MUNITION



2. FABRICATED CONTAINER (ASSEMBLED FROM POWDER CANS)

Figure 3-5. Container for leaking munition.

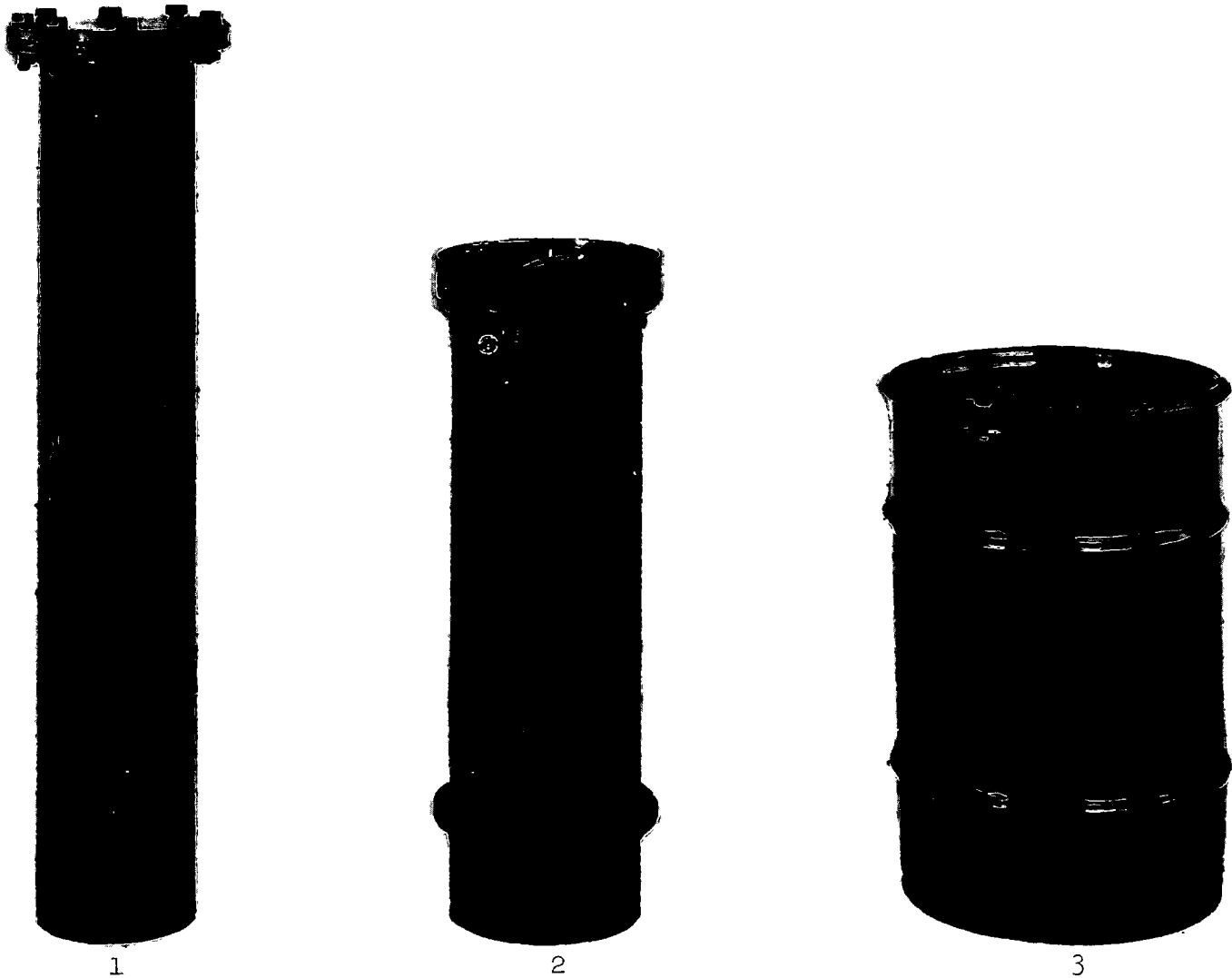
may be necessary to remove that contaminated portion to a site for final disposal.

(1) *Flushing or dissolving.* When contamination is flushed from a surface with water or dissolved by organic solvent, the resulting waste is contaminated and should be sealed for transportation to a disposal site as would the original contamination. Water should not be allowed to soak into the earth or mix with other surface or subsurface waters. This would dilute the initial contamination but also would allow it to spread over a larger area. This would be most undesirable. If there is no way to collect the contaminated runoff into a liquid/vapor-tight container, it should be allowed to drain into a sump containing an appropriate decontaminant for the agent.

(2) *Removing the surface.* When contamina-

tion cannot be removed from the surface by flushing, the area should be detached and subsequently sealed for shipment to an approved disposal site. This means scraping away all earth suspected of being contaminated, or removing roadway, pavement, and other areas or equipment. Although more applicable when agent has soaked into the surface, this method of decontamination can also allow contamination to spread if certain precautionary measures are not performed; therefore, it must be carried out under close supervision.

c. Chemical Neutralization or Detoxification. The most nearly ideal method of decontamination of CB materials is chemical neutralization. When possible, chemical compounds should be used to neutralize chemical agent toxicity or destroy biological materials. The users of these compounds



1. M1 toxic gas identification container.

2. Artillery powder can.

3. Metal drum.

Figure 3-6. Containers for leaking munitions.

must be completely familiar with their properties and effects upon various toxic agents and surfaces. Some chemical agents upon reacting with certain chemical decontaminants generate a large amount of heat which may spontaneously erupt into an open flame. Also, some of these decontaminants are toxic and corrosive to the user. Compounds with these properties may present a physical hazard if not used properly; in some instances, protective clothing may be required. Chemical decontaminants most frequently used are discussed in more detail in appendix J. Decontaminants for other hazardous and corrosive materials are found in appendix K. Decontaminants with a high heat on reaction, e.g., HTH or

STB, should be effectively diluted and applied either as a dry mix or a slurry. These methods of application do not entirely eliminate the potential fire hazard; however, they do reduce the probability of having a fire. Fire in the presence of chemical contamination is most undesirable when the contamination is located anywhere other than an approved disposal site. Although some of the agent is decomposed, some will also vaporize, thus increasing the concentration of the downwind vapor trail.

d. Weathering. The elements of weathering also aid in effectively removing or dissipating contamination. However, such factors as lack of

time, unfavorable conditions, and proximity of contamination to unprotected personnel usually prohibit the use of this method. Some of these effects of the elements of weather on contamination are discussed in more detail in paragraphs 3-22 and 3-23.

3-21. Decontaminants

The decontaminant to be used by the technical escort team in decontamination operations must be carefully chosen before the mission commences. Some factors to be considered are the agent to be decontaminated, the type of surface contaminated, possible agent concentration, time available for decontamination, the surface to be decontaminated, and the climatic condition which might prevail.

a. The Agent To Be Decontaminated. The decontaminant selected must be effective for the agent being transported. It should not interfere with the method of detecting the agent.

For example, caustic soda is an excellent decontaminant for "G" agents; liquid caustic produces a reddish color change on contact with ABC-M8 VGH chemical agent detector paper. Following the application of caustic soda, it might be difficult to decide, by means of the M8 paper, if the item is still contaminated with "G" agent. When a decontaminant such as caustic soda is employed, the user should take added precautions in testing for the agent following the decontamination operation by using a vapor detector. As a second example, decontaminants which are high in chlorine content (such as calcium hypochlorite and supertropical bleach) are excellent for neutralization of nerve agent VX. However the chlorine in the decontaminants invalidates any subsequent use of the enzyme detector ticket test for VX since chlorine interferes with the chemical reaction within the detector ticket and bleaches it.

b. The Type of Surface Contaminated. Liquid chemical agents behave differently on various surfaces. Porous surfaces absorb the agent readily while non-porous surfaces tend to absorb lesser amounts of agents, allowing the agent to accumulate or permitting agent runoff. Either of these

situations makes decontamination difficult. It is necessary to remember that a decontaminant must come into intimate contact with the chemical agent for sufficient time to allow the neutralizing chemical reactions to take place. Intimate mixture is extremely difficult to obtain when the chemical agent has been absorbed into a surface. Liquid chemical agent absorbed into the earth is not necessarily effectively neutralized by spreading an appropriate liquid or solid decontaminant over the surface. The decontaminant must be mixed into the ground to at least the depth of penetration of the agent. On public or private property, removal of the contaminated surface may be the only way to insure total decontamination. On porous material where intimate mixing of the decontaminant and the agent cannot be obtained, decontamination of the agent may be impossible except by complete removal and subsequent destruction of the material. When burning is not feasible, the contaminated area may be sealed in place until removed for disposal.

c. The Time Available for Decontamination. The time available for decontamination is an important factor in reacting during an emergency situation. When nonpersistent agents are exposed to the atmosphere, decontamination must be effected quickly to minimize the amount of agent traveling downwind. Normally, the technical escort team or other emergency reaction team will take the required time to insure absolute decontamination of an area before it is recommended for release for public use.

d. Concentration of Agent. The amount of decontaminant necessary for complete decontamination of an agent is proportional to the concentration (amount) of chemical agent present. An excess of decontaminant is necessary to insure maximum neutralization of the agent. The information in table 3-1 is based on the assumption that intimate mixing of the agent and the decontaminant is achieved. The effects of different surfaces and of temperature extremes are not considered in the table. A minimum of 10 percent excess decontaminants is necessary.

Table 3-1. Amount of Decontaminant per Weight of Agent
Decontaminant (kilogram)

Agent one kilogram	DS2	STB	Sodium hydroxide	Sodium carbonate
GB	20	1.5	.5 (solid)	.7 (solid)
GA	20	1.5	.5 (solid)	.7 (solid)
HD	50	2.3	--	--
VX	10	--	--	--

Note. FM 3-220 states that the amounts listed in this table are calculated on the basis of available information, assuming intimate mixing of the decontaminant and the agent. A minimum of 10 percent excess decontaminants should be added to these amounts. This information is intended only as a guide.

3-22. Effects of Weather, Vegetation, and Terrain on Chemical Agents

To understand the weather elements on the micrometeorological scale is to appreciate their variability patterns and the difficulties involved in coping with adverse conditions. Detailed information on weather effects is beyond the scope of this publication. For additional information, consult joint service manuals FM 3-10 and TM 3-240. Evaporation and decomposition of chemical agents are the principal means by which the weather gradually accomplishes decontamination. Weathering is the easiest method of decontamination; however, lack of time, unfavorable conditions, or proximity of the contamination to unprotected personnel usually force the escort team to use a faster and more precise method. Some weather elements affecting the general behavior of airborne chemical agents include wind, temperature, temperature gradient, humidity, clouds, and precipitation.

a. Wind. Wind direction, speed, and turbulence directly affect the distance and the rate chemical vapors will travel in a given direction.

(1) *Direction.* The direction of the wind determines the course the agent will travel and who will be affected by the cloud. The escort team must ascertain that people occupying areas in the possible path of the agent are warned of the anticipated danger. If an accident occurs in or near a built-up area, variable winds will probably present the most problems in the evacuation of personnel from the area since it must be anticipated that contamination will spread in various directions instead of a single direction.

(2) *Speed.* Wind speed will be a primary factor in estimating the length of time it will take an agent cloud to reach a particular point downwind. High wind speed moves the agent more rapidly; however, the agent cloud rapidly breaks up and dissipates proportionately. Slow, variable winds present more problems because the agent cloud remains intact in the area for a longer period of time. Wind speed can be conveniently estimated using the Beaufort scale (table 3-2).

Table 3-2. Beaufort Scale

Beaufort number	Name	Miles per hour	Description
0	Calm	Less than 1	Calm; smoke rises vertically.
1	Light air	1-3	Direction of wind shown by smoke but not by wind vanes.

Table 3-2. Beaufort Scale — Continued

Beaufort number	Name	Miles per hour	Description
2	Light breeze	4-7	Wind felt on face; leaves rustle; ordinary vane moved by wind.
3	Gentle breeze	8-12	Leaves and small twigs in constant motion; wind extends light flag.
4	Moderate breeze	13-18	Raises dust and loose paper; small branches are moved.
5	Fresh breeze	19-24	Small trees in leaf begin to sway; crested wavelets form on inland waters.
6	Strong breeze	25-31	Large branches in motion; telegraph wires whistle; umbrellas used with difficulty.
7	Moderate gale	32-38	Whole trees in motion; inconvenience in walking against wind.
8	Fresh gale	39-46	Breaks twigs off trees; generally impedes progress.
9	Strong gale	47-54	Slight structural damage occurs; chimney pots and slates removed.
10	Whole gale	55-63	Trees uprooted; considerable structural damage occurs.
11	Storm	64-72	Very rarely experienced; accompanied by widespread damage.
12-17	Hurricane	73-136	Devastation occurs.

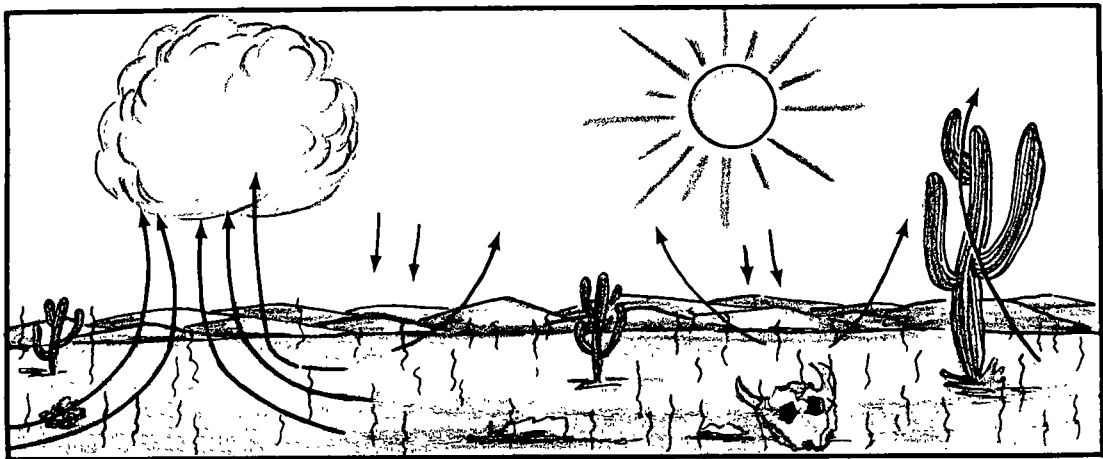
(3) *Turbulence.* Normally, the flow of air near the earth's surface is not steady but is in successions of gusts and lulls that are somewhat variable in direction, strength, and duration. This irregular motion, turbulence, may be classified as mechanical or thermal (fig 3-7).

(a) *Mechanical turbulence* results from surface roughness (e.g., trees, hills, and buildings) and wind speed. The passage of air over the uneven surface of the ground always creates eddies and gusts that are more pronounced with high wind speed and rough surfaces than with low wind speeds and smooth surfaces.

(b) *Thermal turbulence* results from convection currents from the heated surface. The air next to the surface, being warmer than its environment, tends to rise and expand and to be displaced by descending or surrounding cooler, den-



1. Mechanical turbulence.



2. Thermal turbulence.

Figure 3-7. Wind turbulence.

ser air. When convection is great, considerable amounts of air are exchanged between high and low levels. When convection is slight, less air is carried from one level to the other, and the air near the ground is only slightly influenced by mixing with upper-level winds. With the same wind speed and surface conditions, there is less turbulence present when the air temperature increases with an increase in height (stable conditions—*c*(2) below) than when the air temperature decreases with an increase in height (unstable conditions—*c*(1) below). For this reason the layer of air next to the ground is said to be unstable when the temperature gradient is negative (lapse conditions—*c*(3) below).

b. Temperature. The persistency of liquid chemical agents on the ground varies inversely with the temperature. High temperatures speed up vaporization and hasten dispersion of the agent. During periods when temperatures of the atmosphere and contaminated surfaces are high, the escort team's major problem may very well be retarding evaporation until decontamination is effected. At low temperatures, when liquid contamination becomes viscous or solidifies, the efficiency of decontaminants is markedly reduced. Additional time and larger quantities of decontaminant are normally required to insure agent neutralization at low temperatures.

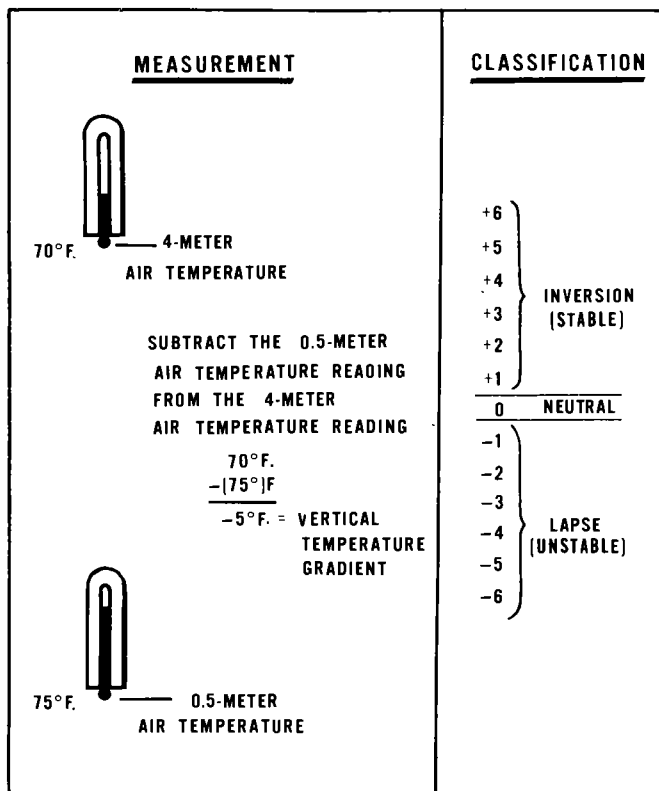


Figure 3-8. Measurement and classification of vertical temperature gradients.

c. *Temperature Gradient.* Temperature gradient (fig 3-8) is an expression of the vertical distribution of air temperature within the surface boundary layer. The surface boundary is that layer of air adjacent to the earth's surface and extending up to the level of 4 to 10 meters.

(1) *Lapse (unstable) conditions.* A decrease in air temperature with increase in height is known as a lapse (unstable) condition. A lapse condition usually prevails during daylight hours if the sky is clear or partially clear. Under this condition, the magnitude of vertical temperature decrease is greatest at the earth's surface, becoming less as the height above the ground increases. Lapse conditions are characterized by appreciable vertical turbulence from thermal currents. Agent vapors under these conditions tend to be dispersed quickly. The mechanical turbulence caused by winds above 10 knots tends to prevent the formation of an intense negative temperature gradient. Thermal turbulence created by surface heating will invariably cause moderate winds; hence lapse conditions normally are accompanied by winds.

(2) *Inversion (stable) conditions.* An increase in air temperature with increase in height

is known as an inversion (stable) condition. An inversion condition usually prevails in the lower layer of air on clear or partially clear nights and early mornings until about one hour after sunrise. Because inversion conditions tend to resist and suppress vertical air currents, such layers are said to be stable. The mechanical turbulence caused by winds above 6 knots tends to prevent the formation of strong inversion conditions. Under an inversion condition when wind speed is 5 knots, chemical vapors or clouds tend to remain close to the ground for long periods. With fairly low but steady wind, vapor clouds travel long distances without excessive diffusion.

(3) *Neutral conditions.* Very little or no change in temperature with an increase in height is known as a neutral condition, which is intermediate between lapse and inversion. A neutral condition indicates a relatively constant temperature between 0.5 and 4 meters above ground. This condition, called isothermal by meteorologists, exists when all the lower level of air (up to 4 meters) is approximately the same temperature. Unlike its action under lapse and inversion conditions, air in this condition neither resists nor encourages vertical displacement and turbulence. A neutral condition usually prevails on heavily overcast days and nights and during the cross-over periods that occur one to two hours before sunset, when lapse conditions normally begin to change to inversion conditions, and one to two hours after sunrise, when inversion conditions normally begin to change to lapse conditions. Over snow-covered surfaces a neutral condition frequently occurs approximately 3 hours after sunrise and 2 hours before sunset; if the snow cover is heavy and the wind speed is low, inversion conditions may exist throughout the day. Independent of cloud cover and time of day, a neutral condition may also exist when the wind speed is greater than 10 knots. A neutral condition is accompanied by relatively few convection currents. Chemical vapor clouds under this condition remain fairly effective, provided the wind speed is not too high.

d. *Humidity.* Absolute humidity is a measure of the water vapor concentration in the air and is expressed in weight of water vapor in a given space compared with the quantity of water vapor that this same space would contain per unit volume of air. In practice, other, more convenient measurements of humidity are generally used, such as dew point and relative humidity. Relative humidity is the ratio (expressed in percentage)

of the quantity of water vapor in a given space compared with the quantity of water vapor that this same space of air would contain if it were saturated (at the same temperature and pressure). In warm air, high relative humidity indicates a high absolute humidity; in cold air, high relative humidity does not indicate high absolute humidity because cold air cannot hold as much water vapor per unit volume as warm air. The amount of water vapor in the atmosphere will directly affect the amount and rate of vaporization of exposed liquid agents. It will also influence the length of time personnel can work while wearing protective clothing.

e. Clouds. Technically speaking, clouds are not micrometeorological weather elements, but they may affect the weather in the 4-meter level. If the sky is covered with clouds, radiation either to or from the earth's surface is reduced. The amount of radiation and the effect on temperature and the vertical temperature gradient depend on coverage height and thickness of the cloud. This could directly affect the rate of agent evaporation from a spillage and also the rate and dispersion of the agent as it travels downwind.

f. Precipitation. Precipitation (rain or snow) is not a micrometeorological element, but its effect on microweather and exposed liquid chemical agents must be considered. Rain rapidly spreads liquid contamination, and snow covers and aids in freezing liquids.

g. Relative Factors. Other factors affecting exposed liquid agent include soil and vegetation.

(1) *Soil.* The type of soil will affect the persistency of the agent. Sandy soil will tend to absorb the agent at a rapid rate and release it at a slower rate, thus increasing the agent persistency. Rocky soil will slowly absorb the agent, thus increasing its persistency. It will allow the agent to pool, thus exposing the liquid to elements of weather for vaporization. The lowest persistency on the ground is on nonporous, hard, smooth surfaces such as paved roads. Heat emitted from the surface will greatly increase the rate of vaporization, thus presenting greater hazard from airborne contamination.

(2) *Vegetation.* Not only the amount but also the type of vegetation will affect the persistency of chemical agents. Chemical agents tend to collect on vegetation, which greatly increases the liquid hazard. Dense broad leafy vegetation will shade the contaminated area, thus increasing the agent persistency. Decontamination in vegetated areas is more difficult than open areas.

3-23. Effects of Weather, Vegetation, and Terrain on Biological Material

The effects of weather on biological material may be different from those on chemical agents. Detailed information on the subject can be found in TM 3-240. Weather, vegetation, and terrain have the following effects on a biological aerosol.

a. Wind. An aerosol, composed of particles containing microorganisms, will be moved along by the force of the wind. The area covered will depend on the wind speed and direction. A dry agent will be more difficult to control than a wet one.

b. Temperature. Normal atmospheric temperatures have little direct effect on the microorganisms in a biological aerosol. An increase in temperature is normally followed by an increase in the evaporation rate of the aerosol droplets. High temperatures (170° F. to 180° F.) kill most bacteria as well as the viral and rickettsial material. However, these temperatures are not normally encountered under natural conditions. Extremely low temperatures will decrease the decay rate or help preserve the life of the material. Exposure to ultraviolet rays from sunlight increases the decay rate and therefore has a destructive effect.

c. Temperature Gradient. Lapse, inversion, and neutral temperature gradients affect the biological agent aerosol in a manner similar to that in which they affect a chemical cloud (para 3-22c).

d. Relative Humidity (RH). This is the ratio (expressed in percentage) of the quantity of water vapor air would contain if it were saturated. Its effect depends on the type of aerosol (wet or dry). With a high RH and a wet aerosol, evaporation is retarded. Evaporation of the tiny droplets of agent will result in the death of the wet microorganisms. Conversely, a low RH with a dry agent is desired because excess moisture speeds up the life cycle and increases the decay rate.

e. Clouds. A heavy cloud cover will restrict the amount of destructive radiation from sunlight.

f. Precipitation. Precipitation will wash the suspended particles from the air.

g. Vegetation. When the aerosol lands on vegetation, it reduces the concentration as a result of dispersion onto grass, trees, and leaves.

h. Terrain Contour. Rough terrain creates wind turbulence and hence has an influence on the vertical diffusion of the aerosol.

3-24. Reaction at an Accident Site

At the accident site, the escort team must immediately assume command. When other emergency reaction teams arrive, the escort team

OIC may still be required to direct operations if he is the senior military representative present. Assuming the responsibility of the site commander, the team must—

a. Determine, if possible, the extent of hazard involved, initiate necessary emergency procedures, and report the accident to the proper authorities.

*b. Establish an exclusion area around the accident site as necessary. The radius of the exclusion area around the accident site should be a minimum of 450 meters. This initial exclusion area can be further adjusted as the situation dictates. All unprotected personnel must be evacuated from this area, and all personnel performing the evacuation must wear the minimum protective equipment commensurate with seriousness of the accident and the necessity of removing personnel from the area of hazard. For chemical agents/biological material, the specific protective clothing includes a protective mask and other readily available protective clothing that would be required for the specific agent involved.

c. Initiate rescue operations and first aid measures for injured personnel determined to be in the hazard area.

*d. As the situation allows, initiate action to establish a command post outside the exclusion radius if the situation requires one. The CP should be located in an uncontaminated area upwind of the contamination a minimum of 500 meters away from the accident.

3-25. Organizing the Command Post

a. *Site Selection.* In most situations, the escort team will be primarily concerned with or committed to other tasks until help arrives at the scene. However, as time permits, the team must give consideration to establishing a command post for controlling all emergency operations. In selecting the CP, the team must take into consideration the location of the accident. Some points to consider include the following:

(1) Approach to the accident/incident area must be made from an upwind direction. Protective mask and possible protective clothing will be worn by all personnel entering the area, as the situation allows.

(2) The CP should be located, if possible, away from built-up areas and main highway arteries, but situated to permit adequate road access, to include access for emergency vehicles.

(3) The selection of high ground giving a view of the accident is ideal. This will facilitate direction of personnel and ease of communication. Low areas should be avoided since agent clouds

normally settle in valleys during periods of inversion conditions and flow along intact during neutral conditions.

(4) The selection of an area affording protection from fragmentation of munitions is appropriate when fire is associated with the accident. The CP must be out of range of possible fragments of high explosive components of the munition.

b. *Checking for Contamination.* After selection of the site, the area must be checked for contamination if any container exploded or burst during the accident. As in all situations when working with toxic chemicals, a team of two persons dressed appropriately for the mission will perform tests with the chemical agent detector kit. A thorough check should be made of the command post area (FM 9-15). The surface of the ground should be visually checked for obvious liquid agent contamination and should be sampled with ABC-M8 VGH chemical agent detector paper. Other vapor tests should be made as necessary to confirm or disprove suspicion as appropriate. Since biological material, liquid or dry, cannot be detected by current field detection procedures, the absence of this contamination must be determined from the indicators at hand. If all checks are negative, personnel will remove protective equipment but must remain alert for possible symptoms. Detailed checking of the CP site for contamination may be eliminated if it is obvious that the area is free of contamination.

c. *Initial Hazard Area.* The initial downwind distance extends 2,000 meters downwind from the accident/incident site. The downwind hazard area is established by extending two radial lines at an angle of 20 degrees on either side of the primary wind direction (total angle of downwind hazard area of 40 degrees). Two buffer zones, extending from the edge of the initial exclusion area, are then drawn to intersect the right and left radial lines as shown in figure 3-9. It may be necessary

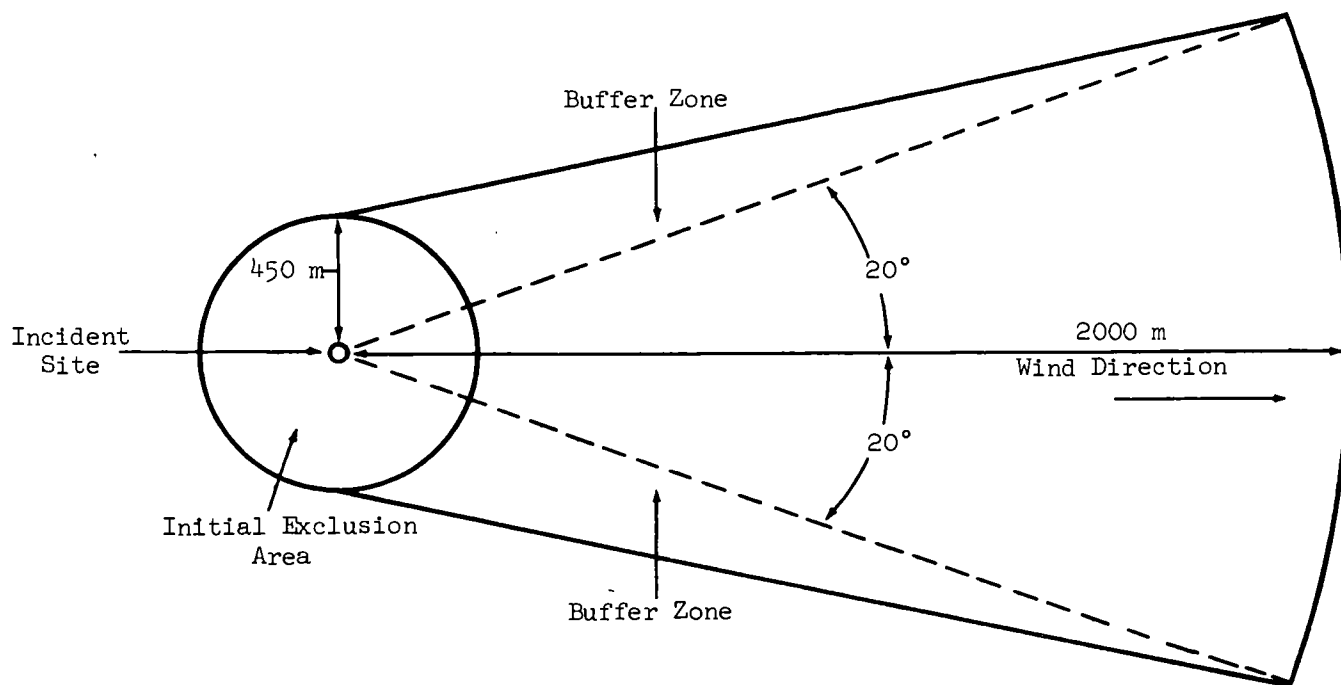


Figure 3-9. Initial hazard area.

to request assistance from local authorities to accomplish this function if it is initiated prior to the arrival of other emergency reaction teams. All unprotected personnel should be evacuated from this area and only those personnel who can be outfitted in proper protective clothing should be allowed to aid operations in possibly contaminated areas.

d. The Hot Line. A hot line is a selected control line separating the contaminated from the uncontaminated area which is set up as a control measure. It must be set up initially in an uncontaminated area upwind of the accident and approximately 50 meters downwind from the CP. The hot line should be as close to the accident as possible but beyond the range of possible contamination and the bursting radius of the items involved (FM 9-15).

3-26. Individual Protection

In response to an emergency involving toxic material, the technical escort team must immediately determine the minimum protective clothing and equipment necessary for entry into a possibly contaminated area. The team must decide what risk is necessary for the evacuation of injured and possibly contaminated personnel from the wreckage of an accident.

a. Emergency Reaction. When personnel are injured and the area is known to be contaminated, an evacuation team may decide that it is necessary to use minimum protective clothing. All personnel entering the contaminated area under these circumstances must, however, be under constant observation by other team members and must be decontaminated immediately upon return and placed under observation for symptoms of agent poisoning.

b. Working Personnel. After all emergency reaction is completed, the technical escort team will begin a detailed cleanup of the area. The team should consider in this instance that there is no substitute for personal safety. All team personnel working in the contaminated area must be under direct line of sight of another member. The team leader will decide the protective garment necessary to wear. The determination will be based on the type of chemical agent and extent of the existing hazards (table 3-3). For biological material, the minimum protective clothing commensurate with the hazards involved must be used.

3-27. Protective Clothing

a. General. Appropriate protective clothing must be worn by individuals handling toxic chemical agents. From available standard protective

Table 3-3. Decontaminating Party—Protective Clothing

Clothing	Agent								
	Nerve	Blister	Liquid bio	Blood choke	Dry bio incapacitant	Liquid smoke	Nuclear	Rocket fuels and oxidizers	Foreign unknown
Impregnated Undergarments (Drawers, Shirt, socks, gloves)	X(VX)	X							X
Coveralls, TAP (Cooling suit as rqr)	X	X	X						X
Coveralls, RFH (Cooling suit as rqr)								X	
Coveralls, Explosive Handlers	(1)		(1)	(1)	(1)	(1)	(1)	(1)	
Boots, TAP (2)	X	X	X					X	X
Boot, Covers, TAP	X	X	X	X	X	X	X		X
Boots, Combat				X	X	X	X		
Fld Clothing, Environmental	(1)		(1)	(1)	(1)	(1)	(1)	(1)	
Hood, TAP	X	X	X						X
Hood, M6A2				X	X (3)	X	X (3)		
Hood, RFA								X	
Protective Mask, M17				X	X	X	(4)		
Protective Mask, M9A1	X	X	X				(4)		X
Self Contained Breathing Apparatus (4)							(4)	X	
Gloves, cotton				X	X		X		
Gloves, Surgeons or Plastic	X		X			X	X		
Gloves, TAP	X	X	X	X	X	X			X
Gloves, RFH, Gray								X	
Gloves, RFH, Red								Oxidizers	
Gloves, RFH, Green								Fuels	
Apron, TAP				X (5)	X (5)	X			

¹ Either item may be worn.

² Boots, rubber, may be substituted, if Boot Cover TAP is worn.

³ Hood or Surgeons Cap.

⁴ Dependent on alpha exposure level.

⁵ Self contained breathing apparatus should be used in place of protective mask whenever in oxygen deficient atmosphere or in closed areas where high agent concentrations may exist.

⁶ Apron, TAP used as protection from liquid decontaminants.

TAP = Toxicological Agent Protective.

RFH = Rocket Fuel Handlers.

uniforms, the individual can select and wear a variety of components to provide him varying degrees of protection commensurate with the degree of hazards involved.

b. Impermeable Protective Clothing. Impermeable protective clothing is made of cotton cloth coated on both sides with butyl rubber. The material does not allow the passage of air through its fabric and, therefore, provides adequate protection against chemical agents and liquid biological material. This clothing is intended primarily for protection of personnel engaged in extremely hazardous decontamination work or in other special operations involving danger due to spillage or splash of liquid agent. For specific details, see TM 10-277.

c. Permeable Protective Clothing. Two types of permeable protective clothing have been standardized. Both uniforms use the same principles of protection. Both have been treated with a chemical compound which neutralizes vapors and small droplets of mustards and V agents. The chemical protective clothing outfit consists of a single layer of impregnated cotton material, and the vesicant agent protective ensemble consists of two sets of impregnated garments. For specific details, see TM 10-277.

3-28. Protective Masks

There are many protective masks available to technical escort personnel when transporting toxic material. These masks alone are sufficient to provide respiratory protection for personnel handling field concentrations of chemical agents or biological materials or concentrations of 2 percent by volume or less.

a. Field Protective Masks (Fig 3-10).

*(1) The M17-series chemical-biological-radiological field protective masks (TM 3-4240-202-14/TM 3-4240-258-14) are standard issue equipment for respiratory protection. Although they provide adequate protection, they are not normally used when the situation requires the use of the M3 toxicological agents protective outfit. The hood used with the M3 toxicological agents protective suit was not designed to permit its use with the M17-series masks.

*(2) The ABC-M24 aircraft chemical-biological protective mask is normally used by aircraft pilots when the situation requires respiratory protection during flight. Accessories to this mask permit the use of both the emergency oxygen source and communications equipment while in flight. Technical escort personnel may also use this mask so that communications with flight personnel can continue during emergency situations aboard the aircraft.

b. Special Purpose Masks (Fig. 3-11).

(1) The M9A1 special purpose chemical-biological protective mask (TM 3-4240-204-14) is especially suited to technical escort personnel because of its compatibility with the M3 toxicological agents protective outfit. The mask provides adequate protection against field concentrations of all known enemy chemical agents; however, it should not be used for protection against commercial gases such as ammonia and sulfuric acid.

(2) The M10 acid and organic vapors gas mask (TM 3-4240-230-12) is a noncombat mask intended for use by personnel when handling chemicals which give off toxic acid and organic vapors. Protection is specifically provided against chlorine, hydrogen cyanide, sulfuric oxide, and carbon tetrachloride in concentrations not exceeding 2 percent.

(3) The M11A1 all-purpose gas mask (TM 3-4240-231-12) is used by both military and civilian personnel handling chemicals which give off toxic vapors and fumes in concentrations not to exceed 2 percent. The mask is not intended for use in firefighting; however, it will provide protection against 2 percent concentrations of carbon monoxide.

(4) The M12 ammonia gas mask (TM 3-4240-232-12) is used for protection from ammonia and hydrazine in concentrations not exceeding 2 percent. The mask canister is filled with silica gel. This mask is not intended for use against chemical agents and smoke.

3-29. Breathing Apparatus (Fig 3-12).

a. The M15 compressed air breathing apparatus (TM 3-4240-224-12) operates independently of outside air. It is designed for use where a deficiency of oxygen or a high concentration of toxic vapor, gas, dust, or smoke precludes the use of an air-purifying canister-type mask. It is adaptable with the M3 hood for the toxicological agents protective outfit. The air tanks of the unit must be worn outside of the butyl rubber uniform and can become contaminated externally when used in a contaminated area.

b. The M20 oxygen generating breathing apparatus (TM 3-4240-212-15) operates independently of outside air. It is designed for use where a deficiency of oxygen exists or where a high concentration of toxic vapor, gas, dust, or smoke precludes the use of an air-purifying canister-type mask. The canister of the M20 mask removes carbon dioxide and moisture from exhaled breath and generates oxygen to replace that used by the individual.



1. ABC-M17 CHEMICAL-BIOLOGICAL-
RADIOLOGICAL
FIELD PROTECTIVE MASK



2. M17A1 CHEMICAL-BIOLOGICAL-
RADIOLOGICAL
FIELD PROTECTIVE MASK



3. ABC-M24 AIRCRAFT CHEMICAL-BIOLOGICAL PROTECTIVE MASK

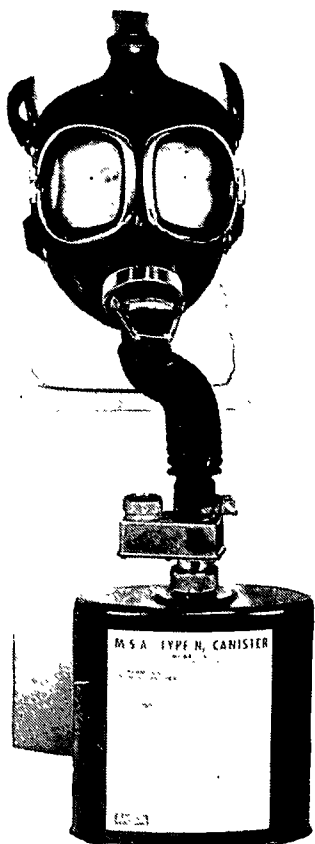
Figure 3-10. Field protective masks.



1. M9A1 SPECIAL PURPOSE CHEMICAL-BIOLOGICAL PROTECTIVE MASK



2. M10 ACID AND ORGANIC VAPORS MASK



3. M11 ALL-PURPOSE GAS MASK



4. M12 AMMONIA GAS MASK

Figure 3-11. Special purpose masks.

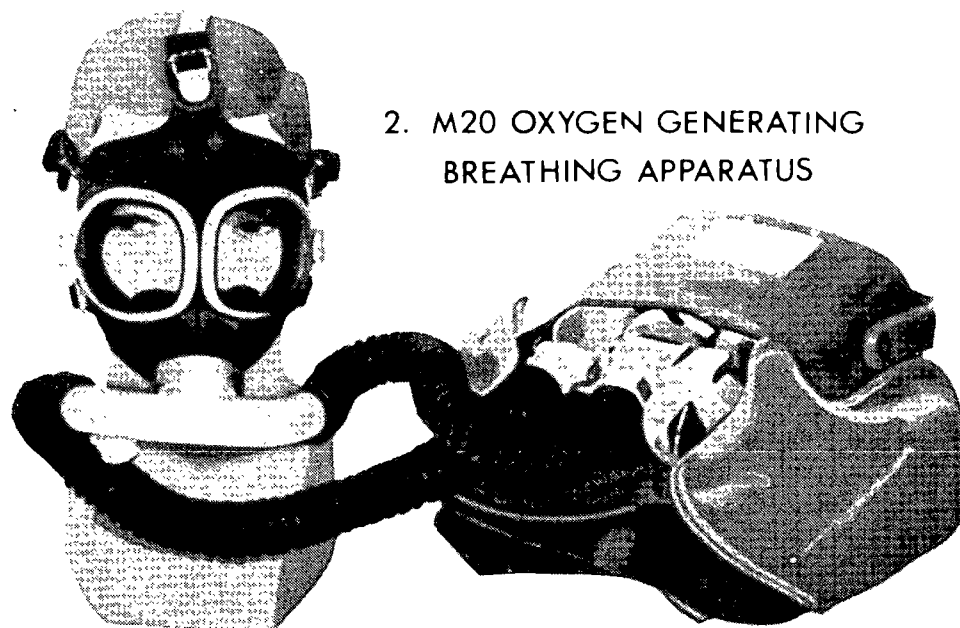


Figure 3-12. Self-contained respiratory protective devices.

3-30. Personnel Decontamination Station

a. Location. A personnel decontamination station (PDS) should be set up in a convenient location as dictated by the size and location of the accident. The station should be located at the hot line upwind of the accident in an uncontaminated area to prevent the spread of contamination. For situations wherein only a few team members will become contaminated, the station can be set up immediately upwind of the contamination. If, however, the team suspects that the cleanup operations will involve a large number of outside emergency-reaction personnel and may require several days, the PDS should be set up in an upwind uncontaminated area so that it can be expanded to meet the needs of the situation. The PDS must be made accessible to using personnel and emergency supply vehicles. The PDS is designed primarily for decontamination of personnel. When necessary, a vehicle decontamination point may be established for washing vehicles and equipment during the cleanup operations.

b. A Typical PDS. Figure 3-13 illustrates a typical PDS. The actual arrangement of the individual stations will depend upon the type and amount of protective clothing being worn, the anticipated number of personnel using the facility, the type of agent, and the amount of agent involved. Regardless of the size of the PDS, four general principles should be followed:

(1) Move into the wind as undressing progresses.

(2) Decontaminate and remove the most heavily contaminated items first.

(3) As closely as possible, follow the undressing sequence shown. All articles of clothing worn at the site will be removed and contained for decontamination.

(4) Remove the protective mask last, just prior to showering. Essential containers for setting up and operating a PDS will vary depending on the size of the accident; however, adequate containers will be required for sealing all contaminated clothing.

c. PDS Setup. (Fig 3-13). *Point A—equipment drop.* This point will be designated on the hot line for deposit of contaminated equipment returned from the accident/incident site. If a cooling suit is worn, it is removed and deposited at this point. A sheet of plastic, a poncho, or an apron spread on the ground will reduce surface contamination problems. Equipment left at this

point will be decontaminated by the undressing assistants after all personnel have been processed through the PDS. *Point B—outer garment decontamination.* The impermeable suit, to include the hood, apron, and boot covers will be flushed with water or a dilute solution of an appropriate decontaminant, to remove the majority of the contamination. The contaminated runoff water should be collected in a sump. A large can is needed to hold the decontaminant, and a brush is required for boot cover decontamination. *Point C—boot cover removal.* Boot covers are removed and placed in a can or plastic bag. As the first boot cover is removed, the uncovered boot is placed across the line, and then the second boot cover is removed. The procedure will reduce spreading of contamination throughout the undressing line. *Point D—boot and glove wash.* Boots and outer gloves are washed with appropriate decontaminant. Caustic soda solution is not recommended due to the possibility of skin contact. Washing soda (sodium carbonate) solution, calcium hypochlorite solutions, STB slurry, or hot soapy water are suitable, dependent on the agent involved. A small can (10-gallon) should be used to allow submersion of each boot. *Point E—boot and glove rinse.* A small can of clear water will serve as a second stage wash and will remove decontaminant. *Point F—hood and outer glove removal.* A small can or plastic bag is used for deposit of the toxicological agents protective (TAP) gloves and hood of the M3 (TAP) suit. When removing the hood the assistant must be careful to prevent breaking the face seal of the M9A1 mask. The wearer should take a deep breath, and hold it while the assistant is removing the hood; then he should clear the facepiece. The M6A2 hood will not be removed from masks of the M17 series. *Point G—mask wash.* The exterior of the M9A1 protective mask is washed with hot soapy water, taking care not to allow water to enter the canister. If the M17 mask is being worn, the entire surface of the M6A2 hood will be swabbed along with the eyelens and inlet valve covers of the mask. A small can of soapy water and a sponge or rag will be used. *Point H—mask rinse.* A small can of clear water and sponge or rag will be used to rewipe the mask. If a mask of the M17-series is being worn, follow the same procedure used at Point G. *Point I—boots and outer impermeable garments removal.* Generally, the rubber boots and M3 (TAP) coveralls will be removed as a unit. If the apron is worn, it will be removed. All rubber items will be placed in a large can or a plastic bag. (Separate

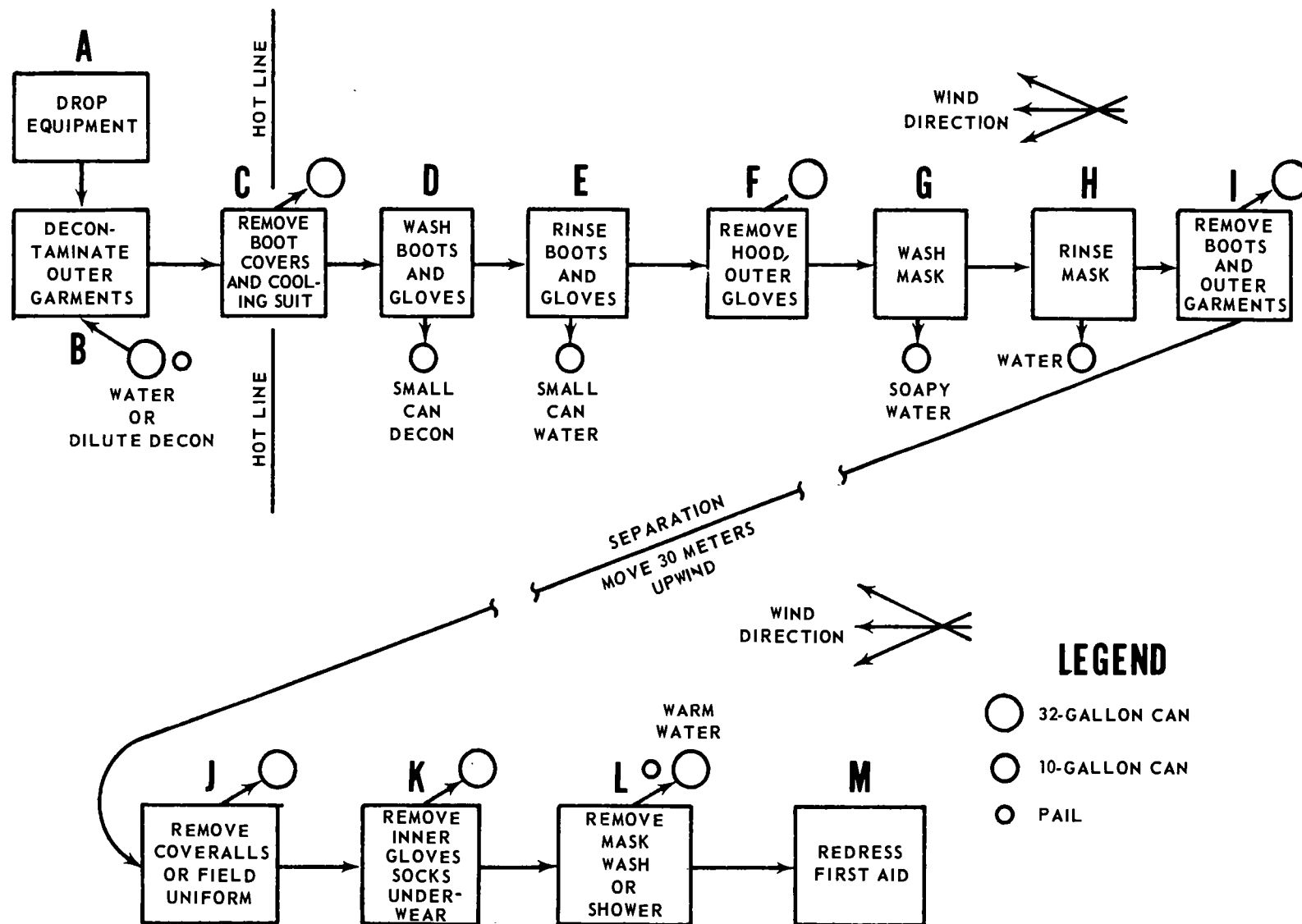


Figure 3-13. Personnel decontamination station and undressing sequence.

Point I from Point J—30 meters upwind.) *Point J—cloth coveralls or field clothing removal.* If coveralls or environmental field clothing items are worn, these items will be removed and placed in large cans or plastic bags. *Point K—inner gloves, socks, and underwear removal.* Remove and place in a large can or plastic bag. The undershirt should be removed last. If the undershirt cannot be removed while wearing the mask, hold breath—remove mask (and hood, if an M17-series mask is worn)—remove undershirt—replace, clear and check the mask, then move quickly to shower or wash point. Replacing and clearing the protective mask may be eliminated if the shower period is close enough to make this action unnecessary. *Point L—mask removal and showering.* Take a deep breath and hold it, remove mask, rinse head and upper body, and resume breathing. Using a small bucket, pour water over the body and lather with soap. Rinse with another bucket of water from large can. *Point M—redressing and aid station.* This station will contain clean clothing for redressing and first aid items.

Note. The separation distance between points is 1 to 2 meters *except* between points I and J where it is 30 meters upwind.

3-31. Downwind Hazard

Following an initial survey of the contaminated area, the technical escort team should compute the downwind hazard distance based on the approximate amount of agent exposed to the atmosphere. This calculation may be made with the M2 downwind hazard calculator (point source) (app L). The dosage to be used in the calculation can be obtained for specific agents from table 3-4. Source strength data for US munitions can be found in appendix M. Since it is difficult to estimate the ratio of agent dissemination from a leaking munition in order to calculate the actual downwind hazard, the calculation should be made by using the total weight of the agent fill. This will present a downwind hazard distance that will represent the maximum distance that a vapor hazard will travel in the event the munition functions. With munitions which are shipped with explosive components installed, this possibility always exists if a fire is involved in the accident or until the explosive components have been removed. When necessary, advise civil or military authorities of the revision of the initial downwind hazard distance previously established. Recommend a new evacuation plan based on approved reduction only.

Note. For more scientific evaluation of the downwind

hazard, see (C) USAMC ORG Report 40, Methods of Estimating Hazard Distances for Accidents Involving Chemical Agents (U).

Table 3-4. Evaluation of Downwind Hazard
Dosage data for computing downwind hazard*

Chemical agent		Dosage Mg-min m ³
Nerve	GA -----	30
	GB -----	2
	GD -----	2
	VX -----	25
Blister	HD, HN -----	25
	L -----	30
Blood	AC -----	100
	CK -----	700
Choking	CG, DP -----	150
Riot control	CS -----	1
	CN -----	10
	DM -----	10
Incapacitating	BZ -----	10

*The M2 calculator and nomograph were designed for calculation of GB vapor hazards, but either will indicate approximate range of effects for the agents listed if the figures above are used for computation.

3-32. Assignment of Duties

a. Training and Execution. Since only a limited number of personnel are assigned to escort a certain shipment, thorough team training is absolutely a necessity. Each team member must know precisely what his duties consist of at an accident site. Each person must be flexible in the execution of his duties and conscientious in assisting others in maintaining control of the situation.

b. Tasks. There will be many small but significant tasks which must be performed. Some will be performed simultaneously and others sequentially. Examples include—

- (1) Notifying parent organization, local authorities, and the nearest military installation.
- (2) Surveying the accident site to determine damage sustained.
- (3) Directing traffic around the scene and warning personnel of hazards involved.
- (4) Evacuating injured personnel and providing initial first aid treatment.
- (5) Briefing local authorities and public officials of hazards involved, and requesting their assistance; supervising and coordinating their efforts with those of the technical escort team.
- (6) Initiating action to contain agent spillage and beginning agent decontamination.
- (7) Extinguishing open flame and beginning segregation of leaking containers.

3-33. Air Movement

a. Upon finding a leak, the escort team will immediately examine the containers, estimate the extent of the leakage, notify the air crew, and initiate action to render the area safe. The team will try to seal off the air crew/escort team personnel compartments from the cargo, if at all possible.

b. If the leak is of such a nature that repairs can be made during flight, such repairs will be accomplished immediately and the pilot notified of the action taken.

c. If the leak cannot be repaired during flight, the escort crew will notify the pilot and advise him whether an emergency landing is necessary or if the leakage can be confined and the mission completed. In either event, the pilot will radio such information ahead so that the consignee will be aware of the situation. The home base should also be notified of such emergencies and advised if an emergency escort team should be dispatched.

d. The escort team will attempt to stop the leak and decontaminate the leaking agent. To decrease the intensity of exposure to the personnel on board the aircraft, the cargo compartment can be vented. Venting will release the agent from the aircraft compartment; however, it should be accomplished under conditions where people on the ground cannot possibly be harmed. Biological material must never be vented to the atmosphere.

e. If an emergency landing is indicated, an isolated airfield should be selected or a base where isolation of the aircraft and assistance from a base disaster control team would be possible. Airfield personnel should be informed by radio of the hazardous nature of the cargo and given necessary instruction to avoid danger. After notifying ground installations of the accidental release of agents, emergency landing instructions can be arranged and a disaster-preparedness organization alerted to the situation.

f. After the pilot selects his emergency landing base, the escort team leader will request that he relay, through the base control tower, specific information to the on-base disaster preparedness activity, the local civil authorities, or the closest military installation. The specific information to be relayed will include—

- (1) Type and quantity of decontaminants required.
- (2) Other supplies and equipment required.

(3) Number of personnel and protective dress required.

(4) General plan for supporting cargo off-loading and accomplishing emergency decontamination.

g. After the aircraft has landed and is parked in the isolated area, the base disaster preparedness organization (on base) will aid decontamination of the aircrew departing the area. The technical escort team will separate or supervise separation of serviceable containers from those that are contaminated and unserviceable. The serviceable containers will be off-loaded under the control of the loadmaster and base personnel supporting the operation. These items will be decontaminated by disaster preparedness personnel and reinspected for serviceability by technical escort personnel. If the items are serviceable, the technical escort team will contact home base for a relief escort team and another aircraft to move the cargo to its destination.

h. The unserviceable material will be off-loaded under technical advice of technical escort personnel. Leak suppression methods and decontamination of equipment will be employed where feasible.

i. The contaminated aircraft should be turned over to the organization or activity which has authority and capability for decontaminating and certifying that the aircraft is safe for service. A copy of the certification statement, when completed, will be submitted to the safety office of the operational base having jurisdiction over the contaminated aircraft and the munitions, the safety office at the parent command headquarters, and the Deputy of Aerospace Safety (AFIAE-02), Norton Air Force Base, California.

3-34. Road Movement

In the event of an accident involving a motor vehicle transporting hazardous material, every means possible will be employed in the protection of persons or property and in the removal of hazards or wreckage. Such means will be employed to prevent fire, to minimize the hazard, and to warn other users of the highway. Care should be taken to prevent any material from contaminating streams, flowing or spilling into sewers, or from being scattered by wind.

a. Immediately, a preliminary reconnaissance will be made to determine the extent of contamination for emergency notification purposes. In

many cases, contamination may be limited to the affected convoy vehicle or to the immediate area surrounding the vehicle. However, if gross leakage occurs, spilling agent unnoticed onto the highway, upon inspection of the cargo the team members must assume that leakage has occurred during the entire travel from the last point of inspection. The team must immediately begin coordination with local law enforcement officers, requesting that the affected section of highway be isolated.

b. The team will initiate emergency notification to the nearest military installation, the team's parent unit, and local and state health and law enforcement agencies. The team will initiate and advise on means of determining the extent of contamination, decontamination required, and other safety measures. The team will arrange for decontamination supply support from the nearest military installation.

c. In case of an accident involving ruptured containers, it will be necessary to block all traffic approaching the accident scene to protect all unprotected personnel from exposure to the agent. The names and condition of all persons who are exposed must be recorded, and the record must be furnished the appropriate military medical and administrative authorities.

d. Upon isolation of the leakers, the team will begin decontamination of the area. Other emergency reaction teams reporting to the scene must be briefed and their efforts employed in conjunction with those of the escort team and civil personnel aiding in the emergency. Decontamination will be accomplished for all contaminated items at the accident site. Leakers which cannot be repaired or decontaminated by chemical neutralization will be encapsulated for movement to a disposal area.

3-35. Rail Movement

In the event of a rail accident, the escort team will set up a marker (e.g., engineer tape) around the danger area. Help may be requested from railroad officials and local authorities as necessary. The team will permit only properly identified, authorized personnel to enter the danger area when they are wearing proper protective clothing and equipment. At night, red lanterns or similar warnings, such as railroad fuzes, should be posted around the danger area.

a. If routine inspection shows evidence of a leaker, or if the team is notified of a leaker, the cargo cars should be thoroughly examined immediately to determine the seriousness of the leak. If the leaker can be repaired and the

hazardous material neutralized within a reasonable length of time, the train will continue to its destination as a unit. The affected cars, if on a main line, will be placed on the nearest isolated spur or siding. This transfer will be made only after measures have been taken to prevent further contamination while enroute to the spur.

b. The selection of the spur or siding should be such that the leaking material will not be unduly hazardous to life and property in the vicinity. This should be emphasized to the train crew. If there is any doubt as to safety, the hazard will either be neutralized or brought under safe control prior to the transfer of the car or cars. Delays in train movement should be held to a minimum. After a preliminary estimate of the situation has been made and a guard organized, an emergency command post will be set up outside the hazardous area.

c. If not previously located, the leakers will be located and the seriousness of the leak and the contamination of the car and loading determined. Primary consideration will be the repair of the leaker and decontamination of the car to permit the car with its contents to continue to its destination without a toxic hazard, and decontamination of leakage which may have occurred along the railroad right-of-way. Efforts will be made to eliminate the transfer of cargo from one car to another and to limit the movement of cargo within the car to a minimum when dealing with a leaker or during decontamination.

d. If the leaker can be repaired and necessary decontamination of the car made to insure against a toxic hazard, the car will be decontaminated and routed to its destination. Upon arrival and after unloading, an examination will be made and a certificate of inspection and decontamination completed for each car before release.

e. If the leaker cannot be repaired, it will be removed from the car for further treatment; but if decontamination of the remainder of the car can be completed so as to insure against a toxicological hazard, this should be done and the car, minus the leaker, routed to its destination. An examination will be made after unloading, and a certificate will be completed. If the leak cannot be repaired and contamination of the car is such that the car cannot be decontaminated so it can continue to be used, the contents (after decontamination) minus the leaker should be transferred to another car and routed to the destination.

f. Cars should be changed only as a last resort. Every effort will be made to decontaminate the car so as to permit continued use of the car even

though a cleanup job on the cargo may have to be made at the destination as a result of decontamination measures used. The car, after unloading at the destination, will be thoroughly examined and a certificate issued.

g. Where a car is found to be contaminated to the extent that its further use is not deemed advisable, it should be decontaminated, after transfer of cargo, to such extent that it will not present a hazard during normal transit. The car should be placarded with appropriate conspicuous signs reading "DANGER — CONTAMINATED — POISON GAS" and be routed as directed by transportation authorities. Tracks, ties, and other contaminated areas of the right-of-way must also be thoroughly decontaminated.

3-36. Sea Movement

Evidence of contaminated air seeping from any cargo hold is indication of leaking material. A member of the escort team, properly dressed in protective equipment and under surveillance of another equally equipped team member, will go into the contaminated hold and locate the leaker. Repair, sealing, or complete incapsulation of the leaker will be accomplished by the team. The cargo will subsequently be decontaminated, using the proper decontaminating solution, with the approval of the ship's captain. Further action must be approved by the captain. The vessel's

captain will be kept informed of the status of the operation. Any waste from the operation must be certified clean prior to the use of normal drain system installed in the vessel. Contaminated waste will be rendered "detoxified" prior to dumping.

a. If the leaking munition or container cannot be repaired to preclude further leakage, the agent will be neutralized, if possible, before its disposal is made at sea. The vessel master is responsible for all final sea dump decisions. All sea dumps must be made in more than 1,000 fathoms of water, a minimum of 10 miles from any shore. The item for disposal must have negative bouyancy (weigh more than 100 pounds per cubic foot). The locations of sea dumps will be reported in addition to time and date. Authority to sea dump hazardous cargo will be spelled out in the operation plans along with the conditions under which the hazardous toxic material can be dumped.

b. If discovered in the loading or off-loading sequence, the leaker will be off-loaded as soon as possible, isolated from all other cargo, and repaired, decontaminated, or disposed of before continuing the load/off-load operation for the remaining cargo. After all of the escorted cargo has been unloaded, an inspection will be made of the cargo holds; and, if necessary, decontamination will be accomplished and a decontamination certificate prepared and issued as required.

Section III. REPORTS

3-37. General

*During the technical escort mission, the escort team leader or designated representative will submit reports to the parent organization to inform and advise all en route support organizations and the FORSCOM movement monitor of progress made en route, need for revisions or changes to emergency support, and requirements for all route contingencies. Since the home organization has more flexibility than the team, it can inform other necessary agencies of progress or emergencies as required. The reports may be augmented by the escort team leader, or designated representative, to convey other pertinent information to the parent organization, and to request information and guidance required to complete the assigned mission. Normally, vessel or aircraft position reports will suffice for the daily reporting requirements for sea and air transportation modes. However, when the cargo is being moved by rail or road, the escort team leader or designated representative will make a periodic status report via telephone or teletype, giving the location of the cargo and the time of the report.

3-38. Route Deviation Report

This report is submitted for approval whenever natural conditions, disasters, or manmade disturbances generate a need for route deviation. The team leader will research possible local routes by-passing the affected area and making recommendations to parent organizations when assigned primary and alternate routes will not permit passage. This will allow for realinement of emergency support to fulfill needs or contingencies along the alternate or newly chosen route.

3-39. Daily Progression Report

This report is submitted daily to advise the parent command and FORSCOM movement monitor of the location of the cargo and all problems that require command attention, support, or action. When a daily progression report for road or rail movement is not received by the required deadline, the parent escort activity may initiate tracer action on the escort team and cargo by contacting the railroad district engineer (for rail movement) or state police (for road movement). This report should consist of date and time initiated, and

location and status of the team/cargo.

3-40. Cargo Acceptance Report

This report is submitted, when applicable, to the parent technical escort organization upon completion of the cargo inspection and certification that the cargo is acceptable for safe movement. The report can be made by telephone or teletype. It will include but it is not limited to information as to the expected time and date of departure and conditions of cargo. Problems that preclude acceptance of the cargo will be reported to the parent organization for resolution before the cargo is accepted.

3-41. Emergency Action Report

★The escort team leader or designated representative after accomplishing initial emergency actions will report by telephone or teletype to the most accessible contact point on his movement plan or amended version of the plan which compensates for route deviations. FORSCOM movement monitor will be contacted when assistance is required for such things as contamination control and decontamination control and decontamination. The team leader will request that designated

activities be provided the following information:

- a. Team designator code.
- b. Name and rank of person making the report.
- c. Location and date/time of incident/accident.
- ★d. Scientific name or code designation of material involved.
- e. Quantity of material involved in the incident/accident.
- f. Description of the incident/accident and cause.
- g. Cause of incident/accident, if known.
- h. Actions taken to confine the material and prevent further exposure or contamination.
- i. List of additional equipment, supplies, and quantity of skilled personnel required to eliminate the emergency.
- j. Number of personnel exposed, injured, or killed.
- k. Other pertinent information.

3-42. After-Action Report

★This report, when required, may consist of a summary of events which occurred during the escort mission. Format and specific contents are normally established by the parent organization.



CHAPTER 4

TRANSPORTATION OF CHEMICAL/BIOLOGICAL/ETIOLOGICAL MATERIALS (STANAG 3571)

Section I. REGULATORY AGENCIES

4-1. Controls

By their very nature, materials requiring technical escort must have stringent controls to insure that they present the minimum possible hazard to the personnel who handle them and the populace among whom they travel. Shipments of hazardous material must conform to all of the military, Federal, state, and municipal ordinances governing their movement. When transporting hazardous material in a foreign country, the regulations of the host nation will be observed. When a conflict between regulations exists, the order of precedence given in *a* through *d* will be observed. Whenever some regulations are more stringent than, but not in conflict with, the regulations taking precedence, the more stringent requirements shall be observed to the maximum. Regulations governing shipments in order of applicability normally adhere to the following sequence.

a. Shipments Within a Post/Station/Base.

- (1) DOD regulations.
- (2) Service regulations.
- (3) Post/station/base regulations.

b. Shipments Within a Municipality.

- (1) Municipal regulations.
- (2) DOD regulations.
- (3) Service regulations.

c. Intrastate Shipments.

- (1) State laws and regulations.
- (2) County and/or municipal regulations.
- (3) DOD regulations.
- (4) Service regulations.

d. Interstate Shipments.

- (1) DOT regulations.
- (2) State laws and regulations.
- (3) County and/or municipal regulations.
- (4) DOD regulations.
- (5) Service regulations.

4-2. Agencies

For technical escort personnel to become familiar with the regulations governing the shipments they escort, the regulatory agencies must be thoroughly understood. Each regulatory agency writes regulations governing the safe handling and transportation of explosives and other dan-

gerous articles (E&ODA) within its jurisdiction.

4-3. State/Municipal Agencies

Each state, county, and municipality writes laws and regulations covering the transportation of E&ODA through its jurisdiction. Normally, these laws and regulations conform with the Code of Federal Regulations (CFR) to facilitate interstate shipments. However, technical escort personnel should be aware of all pertinent regulations covering their escort mission, especially intrastate shipments. It is beyond the scope of this manual to cover the complexities of the regulations of all 50 states and their counties.

4-4. US Government Agencies

a. Department of Transportation (DOT).

(1) *Regulations.* Section 834, Title 18 of the United States Code of Federal Regulations (Public Law 86-710, 86th Congress, as amended) directs DOT to formulate the rules and regulations governing the safe transportation of E&ODA by all modes of transportation (para 4-7b (3).) These regulations are published under different chapters of the title of the Code of Federal Regulations, as given in (a) through (e) below. The regulations are published in revised form annually on 1 January by the Superintendent of Documents, Government Printing Office, Washington, DC. Daily changes are published in the Federal Register.

(a) Title 10—Atomic Energy.

(b) Title 14—Aeronautics and Space—Part 103.

(c) Title 42—Public Health—Part 72. (This provides the basic criteria for shipment of etiological materials (table 4-1).)

(d) Title 46—Shipping—Parts 146 and 147.

(e) Title 49—Transportation—Parts 100-199.

(f) Title 33—Post Security—Part 6 and Parts 123 through 126.

Note. These are cited throughout this manual as, for example, 49 CFR 1:1.

Table 4-1. *Etiological Materials*

Anthrax	Q Fever (Queensland Fever)
Botulism	Rabies
Brucellosis	Relapsing Fever
Cholera	Rickettsial Pox
Colorado Tick Fever	Rift Valley Fever
Coxsackie Diseases	Rocky Mountain Spotted Fever
Diphtheria	Schistosomiasis
Encephalitis (Arthropod Borne)	Scrub Typhus
Glanders	Smallpox
Leptospirosis	Tetanus
Lymphocytic Choriomeningitis	Tuberculosis
Melioidosis	Tularemia
Meningococcal Meningitis	Typhoid Fever
Paratyphoid Fever	Typhus Fever
Plague	Yellow Fever
Poliomyelitis	

(2) *DOT operating agencies.* (For further information see paragraph 5-3.)

(a) *US Coast Guard (USCG).* Functions of the Coast Guard include—

1. Saving life and property.
2. Assisting marine commerce.
3. Enforcing maritime law, including shipments under (DOT) CG 108 and 46 CFR: 146-149.

4. Maintaining navigation aids.

5. Promoting water safety.

(b) *Federal Aviation Administration (FAA).* This administration is responsible for—

1. Operating air traffic control and navigation systems.

2. Certifying airmen, aircraft, and aviation schools.

3. Promoting and developing civil aeronautics.

(c) *Federal Highway Administration (FHA).* This administration is responsible for—

1. Regulating motor carrier transportation of E&ODA.

2. Determining safety requirements for operation and equipment of motor carriers.

3. Establishing employee qualification and service requirements.

4. Investigating motor vehicle size and weight and employee service.

5. Administering motor carrier safety.

(d) *Federal Railroad Administration (FRA).* Basically, this administration is responsible for—

1. Regulating rail transportation of E&ODA.

2. Determining safety equipment on railroad engines and cars.

3. Administering rail carrier safety.

b. *Other Federal Regulatory Agencies.* In addition to DOT, several other Federal agencies

contribute to the regulations governing the transportation of E&ODA. Some of these agencies and their duties are—

(1) *Interstate Commerce Commission (ICC).* This commission regulates the economic and service aspects of performance of rail and motor carriers.

Note. On 1 April 1967 the function and regulations of the Interstate Commerce Commission concerned with the safety aspects of transportation of E&ODA were transferred from ICC to DOT.

(2) *Civil Aeronautics Board (CAB).* This board regulates the economic and service aspects of domestic air carriers and US flag carriers on an international basis.

(3) *Federal Maritime Commission (FMC).* This commission regulates the economic aspects of performance of domestic and international water carriers serving the United States.

c. *Bureau of Explosives (BoFE).* This is a private body of the Association of American Railroads (AAR) that provides the following services:

(1) Inspections.

(2) Hazard classification.

(3) Packaging methods.

(4) Loading methods.

BoFE has delegated authority from DOT; it has no regulatory ability.

4-5. Service Agencies

In addition to the state, local, and Federal regulations governing shipment of E&ODA, each service writes safety and control, handling, and storage regulations for use within the particular service. Technical escort personnel should be aware of these differences, especially on interservice shipments. Some of the service agencies and regulations that are particularly relevant to technical escort are given below.

a. *Military Traffic Management Command (MTMC).* MTMC—

(1) Acts as liaison between DOD and DOT and other civil highway authorities on all regulatory matters pertaining to military shipments.

(2) Is responsible for routing specified shipments via surface and military airlift.

(3) Arranges for guard car for rail escort mission.

b. *Armed Services Explosives Safety Board (ASESBD).* This board determines policy and procedures on E&ODA safety for military services, worldwide.

c. *Army.* Within the Army, the Army Materiel Command (AMC) regulations govern the safe transportation of E&ODA.

d. *Navy.* Within the Navy, Naval Ordnance Systems Command regulations govern the safe

transportation of E&ODA.

e. *Air Force*. The Air Force 11-series technical orders and Air Force manuals (e.g., AFM

127-100, Explosives Safety Manual) provide guidance for the safe transportation of E&ODA.

Section II. REGULATIONS

4-6. General

As previously discussed (para 4-3), the regulations governing transportation of hazardous material are published under different titles of the CFR. To facilitate the use of these complex regulations, tariffs are published for various modes of transportation. These tariffs for transportation modes and a few guidelines for their use will be discussed.

4-7. Rail Transportation

a. *General*. Extracts of 49 CFR, Parts 171-179, are published as Hazardous Materials Regulations of the Department of Transportation (Tariff). This publication actually encompasses all surface modes of transportation and, as such, is probably more widely used than other transportation mode tariffs.

b. *Explanation*. A brief explanation of the different parts of the current tariff is given below.

(1) *List of Participating Carriers*. The carriers listed in this section are on record as participants in the tariff and may transport hazardous materials for the Department of Defense.

(2) There are self-imposed limitations of the carriers and their facilities. Carriers are required by Subpart E, Part 174 of the CFR to report to the Bureau of Explosives for publication within the tariff any restrictions imposed against the acceptance delivery, or transportation of hazardous material over their lines.

(3) *Public Law 86-710, 86th Congress*. This defines the laws (18 CFR, chapter 39) and punishments for violations, and establishes the authority to regulate and administer the rules for the safe transport of hazardous material within the United States.

(4) *Part 171*. This part offers general information and regulations, such as how the numbering and lettering system within the tariff is used. An index, which is broken down into sections, precedes this and all other parts.

(5) *Part 172*. This part contains the commodity list and, in sections 172.1 through 172.4, an explanation of the terms used in the list. Section 172.5 is an alphabetical listing of all articles subject to Parts 171 through 179 of 49 CFR. You will note in 172.2, however, that dangerous articles not listed must still be shipped in accordance

with the regulations for the appropriate hazard classification. In addition to the alphabetical listing of each article, the hazard classification, exemptions and packing, label required, and maximum net quantities allowable per outside container by Railway Express are listed in the chart. Section 172.5 is one of the main areas with which technical personnel should become familiar. Care should be taken to read the chart carefully, especially the abbreviations, signs, and footnotes.

(6) *Part 173*. This part contains the regulations applying to shippers. Of particular interest to technical escort personnel are subparts B, G, H, and I. Part 173 includes definitions of the various classes of explosives, poisonous materials, marking and labeling requirements for hazardous materials and shipping instructions. This part also states that labels are not required on packages containing hazardous materials when the packages are loaded and unloaded under the supervision of Department of Defense personnel and under escort by Department of Defense personnel in a separate vehicle.

(7) *Part 174*. The regulations applying particularly to carriers by rail freight are contained in this part.

(a) *Subpart A*. Subpart A includes the requirement that shipments of Class A explosives can be made only in "certified" cars. The criteria for a certified car and stipulations about certificates which must be executed and attached to certified cars are included here. This subpart requires that "gas handlers" with equipment to handle leaks and other container failure will remain with the shipment during the entire time it is in custody of the carrier. The "gas handlers" are technical escort personnel.

(b) *Subpart B*. Subpart B is a loading and storage chart (app D) which is a simple reference to the compatibility of hazardous material. An X intersecting the horizontal and vertical columns indicates that the items must not be loaded, transported, or stored together. Special attention should be paid to the footnotes when using the chart.

(c) *Subpart C*. Subpart C contains information about placards which must be affixed to railcars transporting hazardous materials. Placards that may be required if a dangerous or poisonous residue remains after unloading the

TRUCK PLACARDING CHART

PLACARDING INSTRUCTIONS TO COMPLY WITH DEPARTMENT OF TRANSPORTATION REGULATIONS

1. Placard four sides of vehicle. Front placard may be on power unit or cargo body.
2. Placard at least three inches from other marking, lettering or graphic displays, except: when required, two different placards should be next to each other.
3. On combinations of vehicles containing explosives or other hazardous materials, placard each vehicle as to its contents as illustrated by the chart below.
4. Remove placards when hazardous materials are removed from vehicle.
5. Hazardous shipments can be identified by: Labels on packages, markings, type of packages, shipper or shipping name. Check with terminal if there is any question about shipment or placarding.

FLAMMABLE GAS Placard 1,000 pounds or more gross weight, Flammable Compressed Gas.	FLAMMABLE Placard 1,000 pounds or more gross weight: Flammable Solids, Flammable Liquids, or combination of both.
COMPRESSED GAS Placard 1,000 pounds or more gross weight, Non-Flammable Compressed Gas.	POISON Placard any quantity of Poison Class "A" or a combination of Poison Class "A" and "B". Placard 1,000 pounds or more gross weight of Poison Class "B". For mixed loads, see DANGEROUS.
CORROSIVES Placard 1,000 pounds or more gross weight, Corrosives.	RADIOACTIVE No placard required for material bearing "radioactive — white I" or "radioactive yellow II" labels.
EXPLOSIVES A Placard any quantity of Explosives "A". For mixed loads, see DANGEROUS.	Placard any quantity of shipments bearing radioactive yellow III label. For mixed loads, see DANGEROUS.
EXPLOSIVES B Placard any quantity of Explosives "B". If mixed with Explosives "A", use EXPLOSIVES "A" placard. For mixed loads, see DANGEROUS.	OXIDIZERS Placard 1,000 lbs. or more gross weight, Oxidizers, organic peroxide or combination of both.
EXPLOSIVES B Placard any quantity of Explosives "B". If mixed with Explosives "A", use EXPLOSIVES "A" placard. For mixed loads, see DANGEROUS.	FOR MIXED LOADS DANGEROUS When commodities requiring different placards are loaded on the same unit and have a combined gross weight of 1,000 pounds or more, use Dangerous placard. Double placarding: When loads requiring Dangerous placard include any of the following, use the appropriate placard with the Dangerous placard: Explosives "A"; Explosives "B"; Poison "A"; Radioactive (requiring radioactive yellow III label as shown above).
CARGO FIRE-AVOID WATER 1. Use this placard only with other placards when they are required. 2. The Cargo Fire-Avoid Water placard should also be used if the "Dangerous When Wet" Label is on shipment, or if use is specified on the shipping papers, or if use is appropriate. ATA Form C1060 Reorder from: American Trucking Assns., Inc., 1616 P St., N.W., Washington, D.C. 20036	NOTE: THESE LABELS DO NOT REQUIRE ANY PLACARD

Printed by permission of American Trucking Associations, Inc.
Figure 4-1. Truck placarding chart.

CAR CERTIFICATE

No. 1. Station, 19..

I hereby certify that I have this day personally examined Car No. and that, as applicable to the type of car, there are no holes or other openings in the roof, sides, ends or car lining, through which sparks might enter; that the floor is clean and in good condition and it and the car lining are free of projecting uncovered pieces of metal or nails; that I have examined all the journal boxes and that they are properly covered, packed and oiled and that the air brakes and hand brakes are in condition for service.

Railway employee inspecting car

SAMPLE

No. 2. Station, 19...

I have this day personally examined the above car and hereby certify that the explosives in or on this car; or in or on vehicles or in containers; have been loaded and braced, and that placards have been applied, according to the regulations prescribed by the Department of Transportation; that the doors of cars so equipped fit or have been stripped so that sparks cannot enter.

Shipper or his authorized agent.

Railway employee inspecting bracing.

NOTE 1: A shipper must decline to use a car not in proper condition.

No. 3 Station 19 . . .

I hereby certify that I have this day personally supervised the loading of the vehicles or containers on and their securement to the above car.

Shipper or railway employee inspecting
loading and securement.

NOTE 1: All certificates, where applicable, must be signed.

Figure 4-2. Railroad car certificate.

shipment are also described in Subpart C.

(d) *Subpart E.* Handling procedures which the carrier must follow are described in Subpart E. Of particular importance to technical escort personnel is the section which deals with the placement within a train of cars containing hazardous materials and the section which requires that a record of change of seals on sealed cars be made and maintained.

(8) **Part 175.** These regulations apply to rail express shipments only. Since the commodities that technical escort personnel are normally concerned with are not carried by rail express, this part will not be covered in this manual.

(9) *Part 176.* These regulations pertain to baggage service aboard passenger-carrying trains. Hazardous material of a technical escort nature is not acceptable for shipment in this type of service.

1. Class A explosives
2. Class B explosives

(10) *Part 177.* This part pertains to the regulations applying to shipments made by carriers on public highways. Most of the general regulations covered so far are applicable to highway transportation. However, there are some notable differences.

(a) *Label requirements.* The label requirements remain the same. Labels are not required on packages containing hazardous materials when the packages are loaded and unloaded under the supervision of Department of Defense personnel and under escort by Department of Defense personnel in a separate vehicle.

(b) *Placarding.* The following placards shall be applied to the front, rear, and each side of the vehicle in letters not less than four inches high. (The wording of this section allows for larger letters and reflectorized placards, and most services require larger signs.)

EXPLOSIVES A
Red letters on white background
EXPLOSIVES B
Red letters on white background



- (Top label) white card
red and black print
- (Middle label) white card
red and black print
- (Bottom label) white card
red print

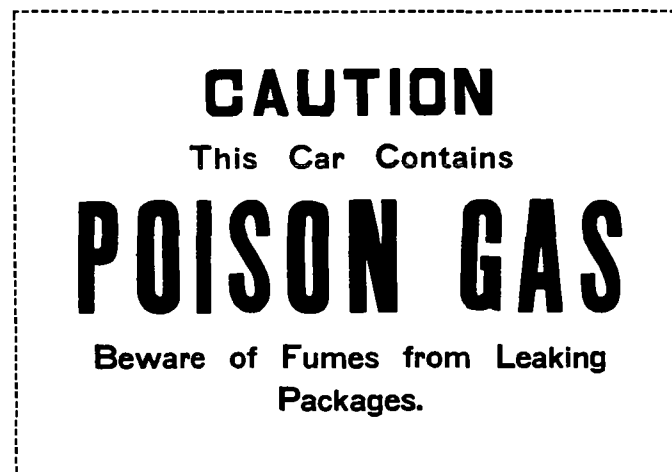


Figure 4-3. Placards for rail freight.

3. Class A poison
4. Radioactive Material
5. Mixed Ladings

Note. The DANGEROUS placard should denote a mixed lading, the aggregate gross weight of which exceeds 1,000 pounds. This placard is in addition to 1, 2, 3, and 4.

(c) *Subpart B.* Subpart B gives general and detailed safety requirements and regulations governing the loading and unloading of hazardous material.

(d) *Subpart C—loading and storage chart.* This chart is similar to the compatibility chart listed for rail movements (app D) with the exception that the terms “truck/truck load” are interchanged for “car/car load.” An X indicates that the items are not to be loaded, stored, or transported together.

(e) *Subpart D.* This subpart contains the regulations to be used in case of an accident involving poisons. Some of the requirements are—

1. Every available means shall be employed in the protection of persons and property, or in the removal of wreckage, in the vicinity.

2. Such means shall also be employed to safeguard against the aggravation of the hazard present and to warn other users of the highway.

3. Care should be taken to prevent any poison from flowing or being poured into any stream or sewer or being scattered by the wind.

(11) *Part 178—shipping container specifications.* This part includes the exact specifications for all containers of hazardous material for which specification containers are required. (Recall that commodities listed in section 172.5 have packaging requirements referenced to sections in part 173. The sections in part 173 specify quantity limitations per package, types of containers authorized, and the DOT specification required for construction of the containers. These specifications are set forth in part 178.)

Note. Shipments by or to the Army, Navy, Air Force, or Nuclear Regulatory Commission must be packed in containers clearly identified as complying with the specifications (for example, DOT 15B125 denotes a wooden box conforming to specifications 15B with an authorized gross weight of 125 pounds); or as authorized by section 173.7, in containers of equal or greater strength and efficiency as determined by their regulations. Almost invariably, the military services have designed, tested, and approved specific container designs for items or materials requiring technical escort. Such containers need not be marked with the corresponding DOT specification number, but the use of such specific-design con-

POISON

Blue letters on white background

RADIOACTIVE

Black letters on yellow background

DANGEROUS

Red letters on white background.

tainers is fully documented in the drawings or specifications for the specific item or material contained. It is the responsibility of the shipper to insure compliance with the military specifications and drawings or the detailed DOT specifications, and he must complete the certification on the bill of lading that he has done so.

(12) *Part 179—specifications for tank cars.* Military poisons are not normally shipped in tank cars; however, Subpart E, Specifications of multiunit tank cars, contains the specifications for one-ton containers.

(13) *Part 397—transportation of E&ODA by motor vehicle.* This part contains the applicability and orders compliance to motor vehicle carriers when hauling E&ODA. It also lists general driving rules.

4-8. Highway Transportation

a. The American Trucking Associations, Inc., Dangerous Articles Tariff 14 is the current publication governing E&ODA by highway transportation. It restates the parts of the CFR that are applicable to motor carriers (Parts 171 through 173, 177 through 179, and 390 through 397). In addition to the American Trucking Associations Tariff 14, the association also publishes other publications for the use of its carriers, such as “Dangerous Article Handling,” a pamphlet containing general safety rules and diagrams of proper placarding and safety equipment; color charts of placards and labels are included. The chart (fig 4-1) can be purchased from the American Trucking Associations, Inc., 1616 P Street N.W., Washington, DC 20036.

b. The Federal Highway Administration of DOT publishes a small pamphlet, “Motor Carrier Safety Regulations,” that can be purchased from the Government Printing Office, Washington, DC. It contains the safety regulations of 49 CFR (Parts 290 through 297) and a subject index that provides quick reference to all parts of the pamphlet.

4-9. Air Transportation

Carrying E&ODA by any means of transportation embraces certain inherent risks. However, the risks involved in transporting E&ODA by aircraft are considered much greater due to the temperature, vibrations, takeoffs, landings, and inability

to stop immediately and correct emergency situations. It can generally be said that Class A explosives and poisons cannot be carried by aircraft except with special authority. Air transportation will be discussed from the viewpoint of the two regulating authorities, military and civil.

4-10. Military Air Transportation

Joint service manual AFM 71-4 is *the* authority for shipment by military air. It is primarily a shipper's manual. Air Force terminals and aerial ports are extremely conscious of the hazards involved with transporting E&ODA and consequently strive for quality control of their shipments to afford the maximum amount of safety possible to their aircraft and crews. This manual is closely followed, and any discrepancies have to be corrected prior to flight. Because of the extreme importance of AFM 71-4, a brief description of each chapter is given below. (The page numbering system indicates the chapter, then page, i.e., chapter 1, page 2.)

a. Chapter 1. This chapter offers an explanation of the terms, rules, and regulations used in this manual. Of special interest are the following:

(1) *Items preceded by a single dagger (†).* These are items whose physical and chemical properties are considered such as to present definite hazards even under normal shipping conditions; and, therefore, shipment by air is permitted only according to paragraph 1-1 *w* (operational necessity) and 1-6 (authority for shipment under operational necessity).

(*a*) Operational necessity exists when the use of any mode of transportation other than air will delay the receipt of the material, thereby impairing the command's mission or jeopardizing the health and welfare of personnel. In general, the authority to approve this priority is vested in the division wing commander or higher authority.

(*b*) In addition to operational necessity, the request must contain a statement to the effect that all packaging and handling requirements have been met.

(2) *Items preceded by a double dagger (††).* These are items whose properties are considered sufficiently dangerous as to present such a minimum safety factor that this would preclude their shipment by air. Items so identified will not be offered for shipment by military aircraft under any circumstances. Chapter 1 also contains provisions applying to all shipments of Class A poisons and biological or etiological materials. It provides the data for obtaining clearances for the material involved, the shipper's responsibilities, and, of particular note here, the technical escort's re-

sponsibilities. Technical escort personnel should make themselves thoroughly aware of the contents of paragraph 1-13 *e* AFM 71-4.

b. Chapter 2. This chapter contains the operational procedures for aircraft containing E&ODA. Radio procedures, placarding, and loading and unloading procedures are covered. Of special importance to technical escort personnel are the inspection criteria in paragraph 2-7 and the placarding chart in table 2. The placards required for aircraft are the same as those required for highway transportation. The placards are not normally attached to the aircraft but are placed around the aircraft on stands to warn of the hazard. If placards are placed on the aircraft, they must be removed prior to flight. The following placards apply to technical escort missions particularly.

(1) Class A explosives—EXPLOSIVES A.

(2) Class B explosives—EXPLOSIVES B.

(3) Class A poisons—POISON.

(4) Radioactive materials (RAM)—RADIO-ACTIVE.

(5) Etiological/biological materials—DANGEROUS.

(6) Mixed loadings—DANGEROUS.

c. Chapter 3. This chapter offers a general discussion of the transportation of dangerous materials by air. For a review of the difference between air and surface transportation, refer to this chapter.

d. Chapter 4.

(1) The alphabetical listing of items in this chapter generally conforms to the commodity list of the Hazardous Materials Regulations of the Department of Transportation (DOT) (Tariff). It lists the article, the DOT hazard classification, and label required; and gives a paragraph reference to proper packaging, storage, and handling.

(2) Of particular significance to technical escort personnel are the symbols used to precede an item. A single dagger (†) and double dagger (††) were explained in paragraph *a* (1) and (2) above. The asterisk (*) denotes that an item may or may not be dangerous and that particular attention should be given to the item. The asterisk should attract attention and cause a determination to be made as to whether or not the item is dangerous. If it is concluded that such an item is not dangerous, a statement to that effect should be included in the shipping documents to establish that the item has been checked and may be transported as general cargo.

(3) Unlike the Hazardous Materials Regulations of the DOT (Tariff) the alphabetical listing of this manual includes references to nerve

agents. They are listed under their German names with the chemical symbol and name following, i.e.:

(a) Sarin (GB), Methylisopropoxyflourophosphine oxide.

(b) Soman (GD), Methylpinacolyloxyflourophosphine oxide.

(c) Tabun (GA), Dimethylaminothoxy-cyamophosphine oxide.

(4) Biological/etiological materials are also listed alphabetically under the general terms of—

(a) Biological agents.

(b) Etiological agents.

e. Chapters 5 Through 11.

(1) These chapters are the references for packaging, storage, and handling requirements of the alphabetical listing. Each contains a general information section and then detailed information on each article listed in chapter 4. The following information is included:

(a) Properties. (Hazards involved are explained.)

(b) Storage and handling data.

(c) Packaging methods.

(d) Marking and labeling instructions.

(2) Chapters 5 through 11 are divided into seven major hazard classes:

(a) Chapter 5—explosives and ammunition.

(b) Chapter 6—flammable liquids.

(c) Chapter 7—flammable solids and oxidizing materials.

(d) Chapter 8—corrosive liquids.

(e) Chapter 9—compressed gases.

(f) Chapter 10—poisons.

(g) Chapter 11—articles not otherwise regulated (NOR).

f. Chapter 12. Marking and labeling instructions for all dangerous articles to be transported by military air are in this chapter. The labeling requirements are those required by DOT for air shipments except that two labels must be applied to each package. All classes of poisons shipped by air require the Poison Gas—Poison Label (DA 67).

g. Attachments. There are several attachments at the end of AFM 71-4 that should be of assistance to technical escort personnel.

(1) Attachment 1 is the loading and storage compatibility chart. It is used in the same manner as the compatibility charts in Parts 174 and 177 of 49 CFR. Again, care should be taken to observe all footnotes.

(2) Attachment 3 lists each article alphabetically and places it in a commodity group.

(3) Attachment 4 groups these items

collectively in firefighting hazards and assigns safe distances to each group.

(4) Attachment 5 gives instructions for completing DD Form 836-1, Briefing for Aircraft Commanders Transporting Explosives or Other Dangerous Articles (illustrated in app G). The information from attachment 4 is in this form.

Note. DD Form 836-1 is no longer required to be executed by shippers for *military* aircraft.

(5) Attachment 6 contains a chart on neutralizing agents and instructions for neutralizing spills of corrosive material aboard an aircraft.

4-11. Civil Air Transportation

a. Shipments requiring military technical escort normally preclude the use of civil air transportation. The mere fact that the military charters a civil or carrier aircraft makes it subject to the regulations discussed in paragraph 4-10. In addition, Logistic Air (LOGAIR), Priority Air Dispatch (PAD), and QUICK-TRANS also fall under military rather than civil regulations. However, in event a shipment must be escorted on a civil flight, transportation guidance may be found in The Official Air Transport Restricted Articles Tariff No. 6-D, which is an air-carrier tariff based on 14 CFR, Part 103 (para c below).

b. 14 CFR, Aeronautics and Space, contains the regulations pertaining to civil air transportation (para 4-4a(1)(b)). Part 103 of chapter 1 of this title is the authority for transporting dangerous articles and magnetized materials. This part contains all the detailed requirements for the shipper about placarding, labeling, marking, and so forth; and must be followed by everyone engaged in air transport of E&ODA.

c. Airline Tariff Publishers, Inc., publication titled "The Official Air Transport Restricted Articles Tariff No. 6-D" is similar to the Hazardous Materials Regulations of the DOT (Tariff) and American Trucking Associations' Tariff No. 14. It is a restatement of Part 103 of Title 14 of the Code of Federal Regulations issued for the use of participating carriers listed on pages 5 through 8. The tariff is similar to its military counterpart in that it offers an alphabetical listing of each article and then the hazard class, label required, and packaging. It also lists the maximum amount of each item that may be carried aboard passenger-carrying and cargo aircraft. The packaging requirements are given in detail in order to identify them properly, i.e., chemical ammunition may consist of projectiles, bombs, or grenades containing Class A poisons.

4-12. Sea Transportation

a. 46 CFR, Shipping, contains all shipping regulations. Part 146 governs the transportation or storage of explosives or other dangerous articles or substances and combustible liquids on board vessels. Finally, Subpart 146.29 titled "Detailed regulations governing the transportation of military explosives and hazardous munitions on board vessels," covers the regulations pertinent to escorted sea shipments. Subpart 146.29 is extracted from Part 146 and published in (DOT) US Coast Guard manual CG 108, Rules and regulations for military explosives and hazardous munitions (para 4-4a (2)(a)).

b. One of the major safety considerations aboard ship is fire. Since the nature of E&ODA increases the fire hazard, special consideration is given to all explosives and other dangerous articles.

c. The manual is written in a manner similar to the other transportation modes discussed above. A brief review of its major parts and special considerations will be covered here.

(1) *Table of contents.* This table offers a complete description of the contents if studied carefully. The following portions are mentioned as being of particular interest to technical escort personnel.

- (a) Definitions and abbreviations.
- (b) Types of stowage.
- (c) Chemical ammunition stowage.
- (d) Explosives admixture chart (compati-

bility).

(e) Classification, handling, and stowage chart.

(f) Alphabetical listing of all items covered in the manual, in their proper Coast Guard class (app A).

(2) *The compatibility chart—146.29 through 99.* Chart A breaks down the three classes of explosives and three classes of poisons into 28 separate hazard classes. Again, primarily from their fire hazard standpoint, the compatibility chart (A) lists all liquid fuels for missiles in one class and all oxidizers in another; and then chart B indicates which can be stored together.

(3) *Classification, handling, and stowage chart—146.29 through 100.* This chart begins with Class I and progresses through each class in numerical order. It breaks down each class into the following categories:

(a) Class.

(b) Description of all articles included in this class.

(c) DOT markings required.

(d) DOT class.

(e) Hazard involved. (This should be of particular interest to all those involved in a shipment.)

(f) Stowage, i.e., where the article is authorized to be stowed.

(g) Handling, i.e., special considerations such as size of drafts, lifts, and boom limits.

Note. Lethal chemical ammunition is in Class XI-A.

CHAPTER 5

TRANSPORTATION OF RADIOACTIVE MATERIALS (STANAG 3571)

Section I. REGULATORY AGENCIES

5-1. General

As of 1 January 1969, the regulations covering transportation of radioactive materials were revised to correspond to the regulations of the International Atomic Energy Agency (IAEA). These modifications were made to Title 49, Code of Federal Regulations and published in the Federal Register, volume 33, number 194, dated October 4, 1968. The title of this publication is Part II, Department of Transportation Hazardous Material Regulations Board: Radioactive Materials and Other Miscellaneous Amendments. Expiration date for all old Bureau of Explosives permits was 28 February 1969. As of this date full compliance with the new regulation is mandatory.

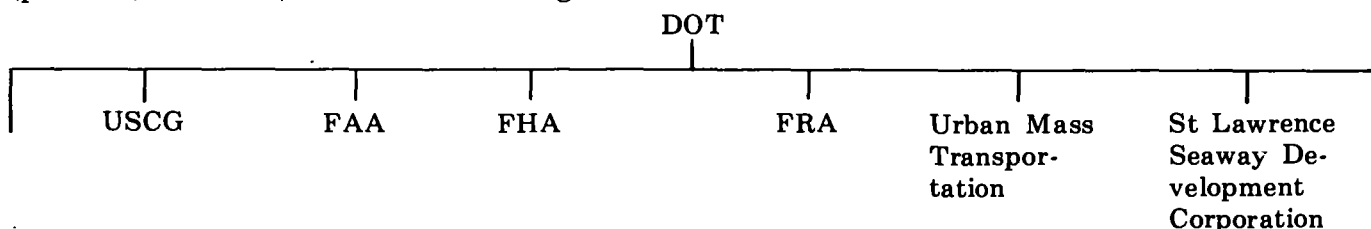
5-2. State and Local Government Requirements

Various state and local governmental agencies have regulations controlling the movement of radioactive materials within their boundaries (para 4-1). However, the state and local govern-

mental regulations are beyond the scope of this manual, since it would require detailed interpretations of each state's requirements; consequently only the Federal laws will be presented. The military services have further amplified these Federal regulations by appropriate restatement of their objectives in applicable service regulatory publications. The service regulatory publications can make the laws more stringent than the Federal requirements but cannot make them less stringent. The Army's regulation on mail shipments of radioactive materials as stated in AR 55-55 is a prime example.

5-3. Federal Regulatory Agencies

a. At the Federal level, DOT regulates the transportation of radioactive materials, moving between states and foreign commerce within the United States by any means of transport—air, land, or water. The agencies which now come under DOT's regulatory control are as follows:



b. The functions of the first four of these agencies are given below. The Coast Guard regulates the handling and storage of radioactive materials aboard ship for water transport. The Federal Aviation Agency regulates the movement of radioactive material by air. The Federal Highway Administration regulates highway movement of radioactive material, and the Federal Railway Administration controls rail shipment. Under the FRA, an agency of the Association of American Railroads has delegated authority from DOT; this agency is the Bureau of Explosives. BofE previously approved package design and shipping procedures for DOT, but as of 28 February 1969 all BofE permits are invalid except for those recertified by the new DOT regulations. The BofE is still responsible for granting waivers to the regulations; these requests for waivers go through

channels to DOT, and the BofE handles them. Paragraph 4-4 also discusses the role of these agencies with regard to E&ODA.

*c. Two other separate Federal agencies are also involved in radioactive materials movement. The US Post Office Department (USPOD) regulates the shipment of these materials through the mails. USPOD is the one agency which did not change its regulations as of 1 January 1969. It permits the shipment of certain small amounts of radioactive materials. The other Federal agency is the Nuclear Regulatory Commission (NRC). The NRC drafts and enforces rules pertaining to nuclear materials including procedures for transport of fissile material and large quantities of radioactive material. DOT is responsible for regulating shipment and for movement of these items in interstate commerce.

*d. Further discussion on radioactive materials transportation in this manual will be centered around DOT regulations only. These regulations are also printed in the Hazardous Materials Regulations of the DOT (Tariff). Any shipment that exceeds any specifications outlined in section II of

this chapter requires a waiver, and any shipment requiring a waiver must be escorted. In addition, escort may be required for the purpose of national security or at any time the shipping installation deems it in the best interest of the Government to escort the material.

Section II. TRANSPORTING THE MATERIALS

5-4. Radionuclides

a. *Groupings.* Radioactive materials are divided into seven groups and a special form category according to the radiotoxicity and degree or hazard during transport. The listing of radio-

active nuclides is in appendix N. Any radionuclide not included in this appendix must be assigned to one of the groups in accordance with the information in table 5-1.

Table 5-1. Radioactive Nuclide Group Assignment

Radionuclide	0-1000 days	Half-life 1000 days to 10 ⁵ years	Over 10 ⁵ years
Atomic number 1-81	Group III	Group II	Group III
Atomic number over 82	Group I	Group I	Group III

b. *Mixtures.* For mixtures of radionuclides the following criteria apply.

(1) If the identity and respective activity of each radionuclide are known, the permissible activity of each radionuclide shall be such that the sum, for all groups present, of the ratio between the total activity for each group to the permissible activity for each group will not be greater than unity.

(2) If the group of radionuclides is known but the amount in each group cannot be reasonably determined, the mixture shall be assigned to the most restrictive group present.

(3) If the identity of all or some of the radionuclides cannot be reasonably determined, each of those unidentified radionuclides shall be considered as belonging to the most restrictive group which cannot be positively excluded.

(4) Mixtures consisting of a simple radionuclide decay chain shall be considered as consisting of a single radionuclide. The group and activity shall be that of the first member present in the chain, except if a radionuclide X has a half-life longer than that of the first member and an activity greater than that of any other member during transportation.

5-5. Packages and Packaging Requirements

a. *Categories.* In the transportation of radioactive materials, the packages required are divided into two categories: Type A and Type B. Type A packaging must be adequate to prevent the loss or disposal of the radioactive contents and to retain the efficiency of its radiation shielding properties if the package is subject to the tests prescribed in 49 CFR 173.393, 173.394, 173.395, 173.398, and in 173.23, 173.24, and 173.28. Type B packaging must meet the standards for Type A

packaging and, in addition, meet the standards for hypothetical accident conditions for transportation as outlined in 49 CFR 173.393, 173.394, 173.395, 173.398, 173.23, 173.24, and 173.28.

b. *Quantity Limitations.* Quantity limitations in packaging radioactive materials are listed in table 5-2. These requirements are explicit for each type of package. Exempt quantities are not considered. When the exempt quantity is exceeded, then the shipper must have the type of package dictated by these quantity limitations. From exempt quantities to the quantity listed under Type A package can be shipped in the Type A package. If this quantity is exceeded, then a Type B package is required and authorized up to the limit specified under the heading of Type B package. If the quantity under Type B package is exceeded in one package, then a Type B package is still used, but the shipper must get special permission to ship the package (a waiver). If the shipper does not want to get a waiver, then he must break the quantity shipped into two or more packages to get back within the limits specified under a Type B package.

Table 5-2. Quantity Limitation in Packaging

Transport group	Type A— quantity (in curies)	Type B— quantity (in curies)
I	0.001	50
II	0.05	20
III	3	200
IV	20	200
V	20	5,000
VI & VII	1,000	50,000
Special form	20	5,000

c. *General Requirements.* General packaging requirements for shipment of radioactive materials are outlined in 49 CFR. These requirements

are many and varied, ranging from exempt material to large quantity and fissile material.

(1) *Responsibility regarding containers.* When containers are supplied by the shipper, the shipper is responsible for ascertaining that all dangerous articles are packaged and shipped in containers meeting the minimum requirements. The shipper may accept the manufacturer's certification or specification marking. When containers are supplied by the carrier, the shipper shall determine that the containers in which commodities are to be loaded are proper containers. This is done by examining the manufacturer's ID plate, specification marking, or certification by the carrier.

(2) *Mandatory information.* Standard requirements for all packages containing radioactive materials include the following information.

(a) There will be no significant release of material. In this case, the packaging must be sufficient to prevent the loss of radioactive contents to the air or surrounding environment under normal transport conditions. If this material is released, a major health hazard may exist and contamination of the vehicle and possibly the area through which the vehicle has passed may result.

(b) The effectiveness of the packaging will not be reduced with transport. The tests for each type of packaging material must be met. If these requirements are not met, the container is not acceptable.

(c) There will be no explosive vapor mixture. This requirement is self-explanatory. The package should not contain material which emits explosive vapors. All vapors emitted have to be contained since they are probably radioactive.

(d) Each container must be marked with letters and numbers identifying the DOT (ICC) specifications assigned to that type of package. These markings must be stamped, embossed, burned, printed, or otherwise marked on the package. The name and address of the shipper, the symbol of the manufacturer of the package, or the user who assumes responsibility for compliance with the specification requirements must also be placed on the outside of the package.

(3) *Reuse of containers.* Containers used more than once (refilled and reshipped after having been previously emptied), including closure devices and cushioning material, must be in such condition that they comply in all respects with the prescribed requirements. Single-trip containers from which the contents have once been removed shall not be used again unless retested in accordance with BofE standards. The outside of each

package must incorporate a feature such as a *seal*, which is not readily breakable; and which, while intact, will be evidence that the package has not been opened illicitly. The smallest outside dimension of any package must be four inches or greater.

(4) *Shielding.* Radioactive materials must be inclosed in packaging which has been designed to maintain shielding efficiency and leak tightness so that, under conditions normally incident to transportation, there will be no release of radioactive material. If necessary, additional suitable inside packaging must be used, i.e., lead or other dense material for shielding and double sealing of leak tightness.

(5) *Safeguards.* The packaging must be so designed, constructed, and loaded that, when large quantities of radioactive material are transported, heating is not a major factor. (Temperatures will not exceed 122° F. on the package surface in the shade or 180° F. at the external surface of the vehicle on which the material is loaded.) Liquid material must be packaged in or within leak-resistant and corrosion-resistant inner containers. The packaging must be adequate to prevent loss or dispersal if subjected to the 30-foot drop test. Sufficient absorbent material must be provided to absorb at least twice the volume of radioactive liquid contents. Absorbent material may be located outside the radiation shield only when it is shown that, if the radioactive contents were taken up by the absorbed material, the resultant dose rate at the surface of the package would not exceed 1,000 millirem/hr. The package must not show any significant removable radioactive surface contamination.

d. Maximum Dose Rate. The maximum dose rate allowable for a mode of transportation must be accurately measured.

(1) Sealed car shipment—except by aircraft—cannot exceed the following requirements:

(a) 1,000 millirem/hr at 3 feet from the external surface of the package.

(b) 200 millirem/hr at any point on the external surface of the car or vehicle.

(c) 10 millirem/hr at 6 feet from the external surface of the car or vehicle.

(d) 2 millirem/hr in any normally occupied position in the car or vehicle.

Note. 1 millirem = 1 millirad.

(2) Other shipments, to include compatible cargo shipment and shipments by aircraft, must be packaged in suitable packages (shielded if necessary) so that at any time during normal conditions incident to transportation, the dose rate does not exceed 200 millirem/hr at any point

on the external surface of the package, the transport index does not exceed 10, and the total transport indexes/car are not greater than 50.

e. Waivers. If any of the requirements for packaging, type of package, quantity limitation, or dose rate are exceeded, a waiver for shipment must be obtained by the shipper and the material must be escorted. Other requirements for shipment are covered in 49 CFR, Part 178 and in 173.393, 173.394, 173.395, and 173.398.

f. Label Exemptions. Small quantities of radioactive material and radioactive devices containing small quantities of radioactive material in normal form are exempt from labeling and packaging requirements. Since these are materials which require no escort, they will be excluded from any major discussion; however, regulations governing their shipment can be found in 49 CFR 173.391 and 173.392.

5-6. Fissile Materials

**a. General.* The regulations are very explicit on exemptions and packaging requirements. In fact, they are too detailed to cover completely in this manual. To ship fissile materials other than the standard check and calibration source sets (AN/UDM-6, TS-784A Radiac Calibrations, etc.) 49 CFR 173.396 must be followed in detail.

b. Packaging.

(1) Fissile Class I includes packages which are nuclearly safe in any number and in any arrangement under all foreseeable circumstances of transport. For these materials no transport index is needed unless required by the radiation

level.

(2) Fissile Class II includes packages which, in limited number, are nuclearly safe in any arrangement under all foreseeable circumstances of transport. These materials may be transported in any arrangement but in numbers which do not exceed an aggregate of 50 radiation units. Such shipments require no nuclear criticality safety control by the shipper during transport.

(3) Fissile Class III includes packages which are nuclearly safe by reason of special arrangement.

c. Mixing. Mixing of packages of other types of radioactive materials including Fissile Class I with Fissile Class II is permissible provided no more than 50 units are carried in any one car or vehicle.

5-7. Package Labels

The label to be used shall be determined by the dose rate at the surface, transport index, quantity of material shipped, or other considerations as follows:

a. Radioactive White-I Label. The dose rate at the external surface of the package must not exceed 0.5 millirem/hr. This label cannot be used for Class II packages.

b. Radioactive Yellow-II Label. This label will be used when the dose rate of the radioactive shipment exceeds the limits of white label requirements. The yellow-II dose rate limitations are not to exceed 10 millirem/hr at the external surface of the package and a dose rate at 3 feet

from the external surface of the package not to exceed 0.5 milirem/hr; the transport index for each package in the shipment will not exceed 0.5 at any time during transportation.

c. Radioactive Yellow-III Label. This can be used when the limits for the yellow-II label are exceeded. This label is used for each Fissile Class III package, each package containing a large quantity of radioactive material regardless of dose rates, each package requiring special approval (waiver), and when the maximum dose rate requirements for material shipped with compatible cargo transported without a waiver are less than 200 millirem/hr at the external surface of the package and 10 millirem/hr at 3 feet from the external surface of the package.

d. Labeling and Marking. Radioactive labels must be affixed two per package on opposite sides. Labels which conform to the model prescribed by the regulation of the IAEA and which are similar in appearance are authorized for import or export shipments only. Labels are not required on truckload or carload lots made by or for DOD if loaded by the shipper and unloaded by the receiver, and if escorted by qualified personnel. Empty containers which have been used for shipment of radioactive material when shipped empty must be securely closed, the external surface must be free of significant removable contamination, and the radiation at the external surface is not to exceed 0.5 millirem/hr. An empty label must be affixed to the package (label with black letters at least 1 inch high on 6-inch by 6-inch white background). Exemption packages must also show the proper shipping name of the contents. Additional information can be found in 173.399, 173.414, 177.815, 178.34-5, 178.104-5, and 178.350-3.

e. Labels Required. In addition to labels required by DOT, FAA, or Coast Guard regulations, a complete DA Label 15 (Caution: Radioactive Materials) (for Army shipments) must be affixed to each outside shipping container. When applicable, other labels must be used to denote physical state and hazards additional to radiation.

5-8. Movement

a. General. Military commanders at all installations in CONUS are responsible for enforcing all laws and regulations of the various regulatory bodies governing movement of military radioactive and fissile materials at their installations. Similarly, military commanders at major over-

seas commands are responsible for enforcing all laws and regulations within their command. If the laws and regulations on radioactive materials in the host nation where the overseas command is located differ from CONUS requirements, the more restrictive of the regulations will apply.

(1) *Transportation and loading requirements.* Normal transportation procedures will be followed in accordance with existing military regulations and various regulatory agency laws and regulations. Routing of radioactive material shipments requiring technical escort will be carefully planned, scheduled, and coordinated by the shipper in advance of actual movement. Such shipments will be routed to avoid densely populated areas to the maximum extent possible. Radioactive materials may be loaded with other compatible cargo to economize on available equipment space. However, no radioactive material of any type will be loaded with shipments of contaminable foodstuffs or with Class A explosives or pyrotechnic materials. Care must be exercised to prevent loading or handling radioactive materials in close proximity to photographic film or supplies. No restrictions are imposed on white label packages; mixed loading or storage of undeveloped film or photographic supplies with yellow-II and yellow-III label packages will be in accordance with tables in 49 CFR 174.586, 175.655, and 177.842.

(2) *Shipping papers.* Shipping papers must contain a statement certifying that the articles being moved are properly classified, described, packaged, marked, and labeled; and are in proper condition for transportation according to applicable DOT regulations, e.g., "This is to certify that the above named articles are properly described, classified, packaged, marked, and labeled, and are in proper condition for transportation according to applicable regulations of DOT." (Paragraph 2-7 contains further information on shipping papers.

(3) Carriers.

(a) Vehicles transporting radioactive or fissile materials must not be left unattended. Bills of lading (app G) with shipping orders must not be left unattended. Bills of lading (app G) with shipping orders will be completed in compliance with the appropriate CFR, and no more than 50 radiation units will be loaded into a vehicle for transportation with compatible cargo. Radiation in the cab of the transporting vehicle will be less than 2 mr/hr; and, based on a consideration of time en route, personnel will not receive more

than 100 millirem in any 7 consecutive days or 0.5 rem in any calendar year.

(b) *Loading of vehicles used exclusively for shipment of radioactive materials must be supervised by the transportation officer or his representative. If transshipment is required en route, the shipping agency will have a representative to supervise. Upon arrival at its destination, the shipment must be accepted regardless of the physical condition of the package. Steps must be taken immediately to minimize exposure and contamination of the area and personnel. Compliance with loading and storage charts contained in 49 CFR 171 through 179 and AFM 71-4 is mandatory.*

b. Air Movement.

(1) *Shipment.* AFM 71-4 covers movement of all radioactive materials. They are normally shipped like other supply items when packed according to DOT regulations and labeled according to appropriate departmental instructions. All shipments must be routed by either the installation transportation or supply office to the requesting activity or approved storage site. The total number of radioactive units in a single shipment must be noted in all copies of the shipping document, DD Form 1387-2 (Special Handling Data/Certification) (app G).

(2) *Storage.* Storage areas for radioactive materials will be clearly identified by radiation warning placards. These placards will be posted on the exterior boundary of each point of approach, with required information. These areas must be monitored by qualified personnel to insure safe radiation levels. Containers must never be opened unless supervised by qualified personnel.

(3) *Handling.* Safety in handling radioactive material is a necessity. This material must not be shipped in an air transport vehicle containing a shipment of Class A explosives, and not more than 50 units of material requiring a yellow label should be transported in a single aircraft. The packages must be adequately blocked and braced to prevent any shifting of lading under normal conditions. Packages showing signs of damage or breakage should not be accepted for shipment. Accountable persons should be notified and decontamination procedures initiated according to departmental instructions. All regulations regarding distances for personnel and film must be followed, as outlined in 49 CFR 177.842.

(4) *References.* Other information regarding air shipment can be found in 49 CFR 103.7, 103.9, 103.19, 103.23, and 103.31.

c. Road Movement.

(1) *Shipment.* Radioactive materials must be packaged and loaded into vehicles in such a manner that the closest distance between the package and the driver or other passenger in the vehicle cab will not be less than the distance shown in 49 CFR 177.842.

(a) Drivers of trucks handling yellow-II and -III label shipments must be thoroughly briefed on the shipment so they can alert military or civilian authorities in case of an accident or a fire. A copy of all shipping papers and emergency written instructions must be available to the driver.

(b) The technical escort team chief will carry a copy of all written instructions and methods of requesting assistance. Accompanying instruments for monitoring radioactive materials must have been calibrated within the last 3 months.

(2) *Carriers.*

(a) All highway vehicles used for radioactive materials shipment must be thoroughly inspected prior to loading and must conform to the provisions of DD Form 626 (Motor Vehicle Inspection) (app G). During movement vehicles will maintain a safe and suitable exclusion area around the shipment and prevent unauthorized personnel from entering the area. The team commander must notify higher headquarters and request assistance as needed. Any undue delay should be reported. Vehicles will operate at a safe speed in conformity with local conditions.

(b) Movement by commercial vehicle is essentially the same as by military vehicle. For routine shipments, routing requests are made in accordance with existing regulations. Any highway vehicle when moving radioactive materials will carry in the driver's compartment a notice as follows:

WARNING

THIS VEHICLE IS CARRYING RADIOACTIVE MATERIALS

When undamaged, the package(s) is
(are) safe to handle for short periods. In
case of accident, notify _____.

(3) *Placards.* Placards must be used for any yellow-III label materials or for any other shipment of radioactive materials which exceed ex-

empty quantities, requiring a waiver. Placards must be placed in front, back, and on both sides of vehicles, must have the "RADIOACTIVE" sign letters 4 inches high as a minimum with at least a 1-inch border, and must be black letters on a yellow background.

(4) *References.* Further information on road movement can be obtained from 49 CFR 177 and pertinent military regulations (DSAR 4500.3).

d. Rail Movement.

(1) *Shipment.* Rail movement of radioactive materials will be made in accordance with applicable DOT regulations and other pertinent publications. Expedited service is required and will be obtained in accordance with existing regulations (DSAR 4500.3). Guard cars for the accommodation of personnel escorting the shipment will be positioned in the train so as to immediately follow the car containing the cargo. Distances prescribed for personnel must be maintained. Cars containing radioactive materials must not be positioned immediately next to cars containing explosives and other hazardous material or cars containing undeveloped film. The design of the placard must conform to 49 CFR 174.553.

(2) *References.* Further information on rail movement can be found in 49 CFR 174 and 175, and in pertinent military regulations (DSAR 4500.3).

e. Sea Movement.

(1) *Cargo shipment.* All water movement or radioactive materials will be made in accordance with Coast Guard regulation CG 108. Prior to loading or unloading radioactive materials, particularly those in heavily shielded metal cast, a thorough check will be made of the ship cranes to be used. Only those cranes capable of lifting five times the weight of the container and its contents will be employed. A check must be made of the latest cargo gear certificate of inspection to determine validity. Worn cargo falls, purchases, and guys must be replaced. All containers of radioactive materials stored on board a vessel must be efficiently lashed, chocked, and braced to prevent shifting or leakage by movement of the containers in any direction during shipment.

(2) *Personnel exposure.* Personnel will not remain unnecessarily in a hold or compartment, or close to a hold, compartment, or deck cargo space containing radioactive materials. The shipper must furnish the carrier with such information and equipment as are necessary for the protection of the carrier's employees, stevedores, or other persons engaged in handling such cargo. In no instance will any person who must necessarily remain in a hold or compartment, or in the prox-

imity of a hold, compartment, or deck cargo space containing radioactive materials, be exposed to a total of more than 100 millirem of gamma radiation or equivalent in any 7-day period.

5-9. Minimum Contamination Levels

Removable surface contamination will not exceed the limits given in table 5-3. Generally, the use of two or three times background on portable radiac instruments is appropriate since more precise measuring equipment will not be available at most military installations or with the technical escort team. In nonclosed vehicles, the dose rate of fixed contamination must not be greater than 0.5 mrem/hr. In closed vehicles, the dose rate of fixed contamination must not be greater than 10 mrem/hr at interim surface or 2 mrem/hr at 3 feet from any interim surface. The vehicle must be stenciled "FOR RADIOACTIVE MATERIALS USE ONLY" with letters 3 inches high. The stencil must be displayed on the outside of the vehicle and on both sides. Furthermore, the vehicle must be kept closed at all times.

Table 5-3. Minimum Remaining Surface Contamination

Curies All contaminants	dpm	Source
10^{-11} Ci/cm ²	2,200/100 cm ²	beta-gamma
10^{-12} Ci/cm ²	220/100 cm ²	alpha
		(except natural or depleted U and natural Th)
Contaminant known to be natural or depleted U or natural Th		
10^{-10} Ci/cm ²	22,000/100 cm ²	beta-gamma
10^{-11} Ci/cm ²	2,200/100 cm ²	alpha

Note. Generally use two or three times backgrounds on appropriate instrument since counting equipment necessary to make the above evaluation is not present at most installations.

5-10. Shipping Papers

Certain information must be included on the shipping papers of radioactive materials movements. When packages are exempted from labeling, the exemption must be indicated by the words "No Label Required" immediately following the description on the shipping papers. In addition, shipping papers must include—

a. Transportation group or groups of the radionuclides in the radioactive material if the material is in normal form.

b. Names of the radionuclides and description of physical and chemical form if the material is in normal form.

c. Activity of the radioactive material in curies.

d. Type of label applied to the package.

e. For fissile radioactive materials, the fissile class of the package and the weight in grams or

kilograms of fissile isotopes.

f. For export, a copy of any special permit issued by DOT for the package.

*g. Reports of shipments (REPSHIP) and report of arrival of radioactive material will be made by the transportation officer.

5-11. Accident/Incident Control and Reporting

a. *Action to Take in Case of an Accident Involving Radioactive or Fissile Materials.* The senior escort personnel will—

(1) If radioactive materials are exposed or if contamination is suspected to exist, establish an exclusion area to prevent the general public from inadvertent exposure to radiation or contamination. Accept local assistance if required.

(2) Take such other emergency action as the situation requires (rescue operations, fire fighting, and so forth).

(3) Notify the nearest military installation and request immediate assistance, giving pertinent information as follows:

(a) Location and nature of accident.

(b) Emergency procedures initiated.

(c) Type of materials involved and help required.

A request should be made that the shipping installation be notified at the earliest possible time; the appropriate departmental officer should be notified; and an on-the-scene report should be prepared. The report will detail all pertinent factors contributing to the accident and the emergency measures initiated to protect personnel and property. This report will be submitted within 24 hours to the safety officer of the shipping instal-

lation with copies to the departmental office and to the safety office of the military installation providing assistance. Additional reports will be needed if military vehicles are involved.

b. *Action to Take in Case of an Incident Involving Radioactive or Fissile Materials.* The senior person present will—

(1) Take the necessary precautionary measures to protect personnel and property and to prevent development of the incident into an accident.

(2) Notify the nearest military installation to request assistance if required.

(3) Notify the shipping installation and request instructions to safely complete the mission.

(4) Prepare an on-the-scene report, which will detail the incident, emergency measures taken, and assistance requested and rendered to reduce the incident.

(5) Report the incident to the safety director of the shipping installation within 24 hours of the event. The safety officer will submit a written report within 5 days to the appropriate service safety director and to such other command levels as are required. This written report will describe in detail the incident, emergency actions taken, and assistance requested and rendered to reduce the incident.

Reports indicated in a and b above will not be given to local police officers or to representatives of the press. The senior man present will make such answers to the local police as are required by law to complete their report but will not discuss the nature of the lading, except to indicate the need for the required safety measures taken. If commercial carrier equipment is involved in an accident, additional reports will be required.

CHAPTER 6

SAFETY AND SECURITY ★ (STANAG 2143, 3400)

Section I. SAFETY

6-1. General

Numerous volumes of information on explosive safety rules and regulations have been written by various civilian and Federal agencies. This manual has neither the scope nor length to attempt to consolidate all of these regulations and other information that may be pertinent to technical escort personnel. Also, to offer a simplified, abbreviated set of safety rules or facts would, in itself, be unsafe. Therefore, this section will be concerned with pertinent publications on explosives; chemical, biological, and radiological safety; and safety responsibilities. These publications, when used correctly, provide a wealth of information on safety principles and procedures. To supplement these, the Technical Escort Team, upon determining what type of container or munition it must escort, can consult other appropriate publications describing specific characteristics and properties of the cargo.

6-2. Publications

a. In addition to many other publications on explosives safety, the following publications are most often used within a particular service. These publications can be used as the basic references during technical escort operations.

(1) Department of the Army provides safety guidelines for handling CB materials in the 385-series regulations. Joint Service Manual TM 9-1300-214, FM 5-25, and TM 9-1300-206 offer additional guidance.

(2) Navy/Marine Corps regulations include Ordnance Pamphlet NAVORD OP 5, volume 1, Ammunition Ashore—Handling, Stowing, and Shipping. Volume 1, OP 2165, Navy Transportation Safety Handbook, and OP 2239, Driver's Handbook—Ammunition, Explosives, and Dangerous Articles, also, contain regulations related to technical escort.

(3) The Air Force publication most pertinent to technical escort is AFM 127-100, Explosives Safety Manual.

★ b. Present publications on safe handling, transportation, and disposal of chemical and etiological materials will provide appropriate information to aid the escort team in accomplishing its mission. These publications contain information on agent effects, characteristics, and decontamination and

testing procedures. Escort personnel, as a minimum, must master the safety requirements of their particular service in regard to these toxic agents.

c. There are many Federal and military publications which provide specific information on radioactive materials. Those which specifically provide information on handling, transportation, and storage of materials which spontaneously emit ionizing radiation are of primary importance. These publications provide detailed information on the rules and regulations concerning such matters as minimal dose limitation, personnel records, and posting of warning signs. Thorough examination of these publications prior to commencing the escort mission will aid the team in conducting a safe mission. Federal publications include CFR 10, Part 20, Atomic Energy; Joint Service publications include AR 40-14.

6-3. Responsibility

a. *Command.* Safety is a command responsibility. The publications of all the services emphasize that the commanding officer is responsible for all aspects of safety within the command. Accidents usually result from failure to observe regulations, failure to understand hazards, or failure to take necessary precautions. In each case the "failure" denotes human error, specific carelessness, or poor judgment. The supervisor must advise and train his men so that they are constantly aware of the hazardous nature of their work. Furthermore, he must indoctrinate his men with the philosophy that each individual is responsible for his own and his fellow workers' safety; and he must promote safety-mindedness by persuasion, and by authoritative force when necessary.

b. *Individual.* DSAR 4600.3 states that every one participating in the shipment of E&ODA is responsible for compliance with rules and regulations of the regulatory bodies governing their safety. This is just one of the many publications that places the responsibility for explosives safety on the individual. It is the responsibility of every individual involved with handling, safety, and transportation of any dangerous material to thoroughly know the hazards, precautions, and procedures involved in its safety.

Section II. SECURITY

6-4. General

a. Technical escort personnel are frequently called upon to escort classified shipments. In many cases, a member of the team may be designated as an official courier. Security requirements during shipment of such material are most stringent and require specialized training of technical training program contained in appendix VII, FM 19-30 be used as necessary to provide escort personnel basic or refresher training in general security requirements. Further guidance for physical security training can be found in Army Subject Schedule 19-30 and Army Training Circular 19-2.

*b. Shipments in transit are vulnerable to numerous hazards, both natural and manmade. These hazards include sabotage, espionage, dissident activity, adverse weather, and accidents. Escort personnel must fully understand the threat posed by such hazards and be constantly vigilant for evidence of circumstances indicative of such activity. It is imperative that all personnel concerned with movements as prescribed in this field manual regard the shipments as particularly sensitive. When shipments emanate from a military installation, escort arrangements should be coordinated with the responsible security officer or Provost Marshal.

6-5. Release of Information by Individuals

It is also imperative that each member of the team be fully aware of the high degree of responsibility and trust that is placed upon him as an individual. Escort shipments, whether classified or unclassified, should be regarded as sensitive information; and escort personnel should not discuss information concerning the shipments with family or friends. Classified shipments must, of course, be handled on a need-to-know basis. Personnel actually performing the escort duty will not discuss the details of the mission with other members of the unit.

a. Personnel accompanying a shipment should hold themselves aloof from, and refrain from engaging in conversations with, civilians and military personnel not participating in the shipment. When such personnel are properly identified and are duly authorized to inspect the cargo, the contents of the containers and the intended use will not be divulged.

b. Frequent unit security checks can be made to test the security-consciousness of personnel. Tests must be conducted so that it will not be readily apparent that a security test is being made.

6-6. Physical Security of Cargo

In addition to protecting the cargo by disseminating as little information about its existence as possible, the technical escort team must maintain its physical possession while en route. Shipments are most vulnerable during loading and unloading and at any time the shipment is stopped. Continuous surveillance of the cargo will be maintained with special emphasis during dangerous periods. Personnel should be assigned to guard the cargo at each stop, scheduled or unscheduled.

6-7. News Releases

The senior surviving member of an escort team should be responsible for releasing information to the public news media in the event of an accident or incident. Several different news releases may be necessary, to satisfy the situation or explain the nature of the accident and provide followup information (app H contains a format). The names, affiliations, and addresses of those to whom information is released should be recorded in the emergency action log.

a. *Classified Cargo.* In case of an accident or incident involving classified material, the escort team should make every effort to cover any exposed cargo or make it unrecognizable. The assistance of local authorities should be requested to keep persons away from the cargo.

b. *Relations With the Press.* The technical escort team should refrain from using deadly force if news media representatives refuse to cooperate in protecting classified DOD material. However, the team can—

(1) Identify press representatives by checking their credentials.

(2) Write down the name of the reporter and the news service he represents.

(3) Inform news media representatives of the presence of exposed classified material which cannot be removed or covered immediately and ask them to cooperate in its protection. Photographers will be informed that violations of the prohibition on photographing classified DOD material are also violations of Federal criminal statutes (78 CFR 795, 797).

(4) Request assistance of appropriate civil law-enforcement officials in preventing compromise of such material and in recovering all photographs, negatives, and sketches which are presumed to contain classified information.

(5) Request the cooperation of the superiors of the offending news media representative, informing them that the publication of such classified information or refusal to return it to military

authorities will be a violation of Federal statutes (18 CFR 793(4), 795, 797).

6-8. Arming Personnel

The force necessary to prevent or terminate what a person reasonably believes to be an unlawful or unauthorized interference with Government property should be justifiable. The authority and jurisdiction of escort personnel are very limited. They are permitted to use only that force necessary to protect Government property. A guard must first warn an intruder that the property he is securing is Federal property and that he is rightful custodian. The guard will attempt oral persuasion to keep anyone from unlawful possession. Additionally, the guard will attempt to request assistance from local law enforcement agencies and use whatever nondeadly force believed reasonably necessary. Deadly force will be used only as a last resort to prevent a dangerous felony. Classified missions and other shipments of chemical and biological material specified by service regulations may require the use of weapons. In special situations the requirement to arm a technical escort team may be determined by the technical escort unit requirements.

a. Arms and Qualifications. The selection of arms for use on an escort mission might include shotguns, rifles, or pistols, or a combination of the arms, depending on the sensitivity of the mission, areas to be traveled through, and the qualifications of personnel. The timely issuance of weapons and ammunition should be the responsibility of the team leader. Personnel accompanying a shipment as guards may find the shotgun more advantageous to use in populated areas due to its restricted range. Should the shipment route be primarily through open, unpopulated terrain, a rifle may be more desirable due to its long-range capability. Because of the team leader's duties and the flexibility he must maintain, he should be armed with a pistol regardless of the type of weapon carried by other team members. All personnel should have completed the standard qualification requirements for the specific weapon in their possessions. Personnel should also have successfully completed unit training consisting of the legal authority, responsibility, and jurisdiction of escorts performing armed guard duty to include search, seizure, and the use of fire arms; and the latest policies and doctrine on the use of force and the care and use of weapons. Teams accompanying air shipments should be armed with pistols only; however, a combination of pistols and shotguns may be used on road, rail, and sea modes of transportation.

b. Security of Weapons. The team leader or assistant leader should employ strict control of weapons and ammunition while on an escort mission. During highway and air movements, the weapons and ammunition should be in the immediate possession of an individual exercising direct control, until issued for performance of security duty. On board a ship, the weapons and ammunition will be secured as directed by the ship's captain. When traveling by rail guard car, weapons should be secured in an appropriate arms rack and the ammunition secured by the team leader assistant until needed for security duty. The escort team should use weapon and ammunition storage facilities at all military installations or activities during overnight stops, or while on extended duty. The loss of weapons or ammunition should be reported to the activity security office and to the escort unit. During travel, the loss of weapons or ammunition should be reported to the team's unit.

c. Safety Aspects of Weapons.

(1) When bearing arms, personnel will keep the weapon on safe except when undergoing inspections prior to going on or being relieved from guard duty.

(2) Pistols should remain holstered, and the ammunition magazines should be kept in the ammunition pouch except during official inspection and upon being posted on guard duty. A round will not be inserted in the firing chamber except in case of intent to use the weapon.

(3) Personnel armed with shotguns, upon going on guard duty, may load the magazine; however, a round will not be inserted into the chamber except in case of intent to use the weapon.

*(4) Following duty requiring weapons and ammunition, all weapons and ammunition will be thoroughly cleaned and secured.

d. Weapons Aboard Commercial Aircraft. By regulation (AR 190-14), any person whose official duties require him to have on or about his person a concealed or unconcealed deadly or dangerous weapon while a passenger aboard any aircraft operated by commercial air carriers in air transportation shall confidentially notify the airline station manager or supervising agency (or, in their absence, the ticket agent) of this fact before boarding the aircraft. Upon request from airline officials or employees, he must present his travel orders which should constitute authorization to carry weapons. The weapons and ammunition will not be shipped in personal baggage or in escort kits but should be hand-carried by escort team personnel. Under no conditions should a loaded

weapon be carried aboard a commercial aircraft.

6-9. Legal Aspects of the Use of Force

The decision as to when and how much force can be used will ultimately depend on the facts and circumstances of each case as well as the law in the state where the incident occurs and will be guided by the provisions of AR 190-28. Accordingly, the information presented below is to be used as a guide only and cannot be regarded as a firm solution to any problem. In any event, military personnel should take only such actions as are immediately necessary to protect Government property; and, whenever possible, the civilian authorities should be called upon to take action.

a. Defense of Property. It is the generally accepted rule that a person owning, or lawfully in possession of, property may use such force as is reasonably necessary under the circumstances to protect that property; and for the exertion of such force he is not liable either criminally or civilly. It is also the general rule, however, that the use of a deadly weapon in the protection of property is unjustifiable, except in extreme cases.

(1) A person is privileged to threaten or intentionally use force against another for the purpose of preventing or terminating what he reasonably believes to be an unlawful interference with his property. Only such degree of force or threat of force may intentionally be used as the actor reasonably believes is necessary to prevent or terminate the interference. It should be noted

that the United States as a property owner will not be distinguished from private owners of property since there appears to be no legal basis for such distinction in either the cases or statutes dealing with the protection of property.

(2) As long as the defense of property involves only the use of nondeadly force (that is, force neither intended nor likely to cause death or serious bodily harm), the above rule is generally recognized.

(3) The majority rule regarding the defense of property by the use of deadly force limits the use of such force to situations in which the victim is committing a dangerous felony—that is, one involving violence, force, or surprise. The rule is not stated in exactly the same way in every jurisdiction, but the variations are not too great. Thus, it is said that deadly force may be used in defense of property only against one who manifestly intends or endeavors, by violence or surprise, to commit a known felony, or when there is a felonious use of force on the part of the aggressor, or a felony which is either an atrocious crime or one attempted to be committed by force or surprise.

b. What a Serviceman Can Do. Ordinarily, a serviceman must tell a person intruding in or interfering with government property to desist. If that fails, he may use whatever nondeadly force he reasonably believes necessary to terminate or prevent the intrusion. He may resort to deadly

force if he reasonably believes it is necessary to stop the intruder from committing a dangerous felony or, when a felony has actually been committed and he reasonably believes the intruder has committed it, to arrest him. In the latter case, as well as when the intruder has actually committed a breach of the peace in the serviceman's presence, the serviceman may also take him into custody and search him. Otherwise, the intruder may be detained. However, the serviceman may pursue any intruder who has actually taken government property and, using nondeadly force if necessary, recover the property.

c. The Individual as Defendant. With regard to the individual serviceman, the possibility of criminal liability to both state and Federal governments must be considered in addition to any possible civil liability for damages. It has long been recognized that an official agent of the United States is not subject to the criminal sanctions of a state for acts done within the scope of his duties. This relative immunity from state prosecution is somewhat misleading, however, since the reasonableness of the serviceman's conduct will be closely scrutinized in determining whether his actions were done in good faith within the scope of his duties and without criminal intent. For example, in *Brown vs. Cain*, 56 F Supp. 56 (E.D. Pa 1944), Coast Guardsman Brown, guarding a shipyard, was struck by a brick during a riot. He shot at the legs of a man running away, thinking that was the guilty person and seeking to arrest him. The man tripped and fell just as Brown fired; and, as a result, that bullet inflicted a fatal wound. Brown was indicted by the state for murder and applied to the Federal Court for a writ of habeas corpus. Although the court eventually granted the writ, saying Brown was amenable to the law of the United States and to no other, the reasonableness of Brown's conduct was thoroughly examined. With regard to criminal responsibility to the

United States, the serviceman has no immunity from prosecution. However, the acts of a subordinate done in good faith in compliance with his supposed duty or orders are justifiable unless those acts are manifestly beyond the scope of his authority, or the order is such that a man of ordinary sense and understanding would know it to be illegal.

d. Personal Liability. The serviceman has some degree of protection from personal liability, both civil and criminal, for acts done in the performance of duty or pursuant to apparently legal orders. Since the soldier cannot legally be given the duty of enforcing the law (because of the Posse Comitatus Act), if he mistakenly makes an unlawful citizen's arrest or uses excessive force in making a lawful one, he cannot claim this protection. Thus, he is fully subject to both civil and criminal liability when making an arrest. The risk of such liability is great since a citizen's arrest is lawful in most states only if the person arrested has actually committed a breach of the peace in the serviceman's presence or if a felony has actually been committed and there are reasonable grounds to believe that the person arrested committed it. In other cases, the serviceman's reasonable belief is no protection. Consequently, although there is always some risk that the serviceman will be personally liable for the use of force, the risk is greater when he is making a citizen's arrest.

e. Civilian Assistance. Pursuant to AR 55-16, coordination with civilian law enforcement officials will be established to insure that adequate security is maintained. In the event of an accident/incident involving the shipment, military security personnel will request the assistance of appropriate civil law enforcing officials in preventing compromise of such material and in recovering all photographs, negatives, and sketches which are presumed to contain classified information.



APPENDIX A

REFERENCES

(STANAG 2154, 2143, 3327, 3400, 3571)

A-1. Joint Service Publications

a. Department of Defense.

DSAR 4500.3/AR 55-355/AFM 75-2/MCO P4600.14. Military Traffic Management Regulation.

b. Department of the Army.

AR 40-14/DSAR 4145.24. Control and Recording Procedures: Occupational Exposure to Ionizing Radiation.

AR 55-38/NAVSUPINST 4610.33A/AFR 75-18/MCO P4610.19B, DSAR 4500.15. Reporting of Transportation Discrepancies in Shipments.

AR 55-80/OPNAV INST 11210.1B/AFR 75-88/MCO 11210.2A/DSAR 4500.19. Highways for National Defense.

AR 55-162/OPNAVINST 4600.11C/AFR 75-24/MCO 4643.5/DSAR 4540.8. Permits for Oversize, Overweight, or Other Special Military Movement on Public Highways in the United States.

AR 55-355/AFM 75-2/NAVSUP INST 4600.70/MCO P4600.14-A/DSAR 4500.3. Military Traffic Management Regulation.

AR 75-14/OPNAVINST 8027.1E/AFR 136-8/MCO 8027.1B. Responsibilities for Explosive Ordnance Disposal.

AR 95-27/AFR 55-14/OPNAVINST 3710.31B. Operational Procedures for Aircraft Carrying Dangerous Materials.

AR 740-32/OPNAVINST 8070.1B/AFR 136-4/MCO 4030.25 B. Responsibilities for Technical Escort of Dangerous Materials.

FM 3-9/AFR 355-7 Military Chemistry and Chemical Compounds.

FM 3-10/MINIP 36-2/AFM 355-4/FMFM11-3. Employment of Chemical Agents.

TM 3-216/AFM 355-6 Technical Aspects of Biological Defense.

TM 3-240/AFM 105-7 Field Behavior of Chemical, Biological, and Radiological Agents.

TM 8-285/NAVMED P-5041/AFM 160-12. Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries.

TM 9-1300-214/TO 11A-1-34. Military Explosives.

c. Department of the Air Force.

AFM 71-4/TM 38-250 Packaging and Handling of Dangerous Materials for Transportation by Military Aircraft.

NAVSUP Pub 505/MCO P 4030.19C/DSAM

4145.3

A-2. Department of the Army Publications

AR 11-17	Chemical Surety Program.
AR 40-13	Radiological Emergency Medical Teams.
AR 50-4	Safety Studies and Reviews of Nuclear Weapon Systems.
AR 50-5	Nuclear Surety.
AR 50-21	Chemical Accident and Incident Control (CAIC).
AR 55-16	Movement of Cargo by Air and Surface—Including Less than Release Unit and Parcel Post Shipments.
AR 55-55	Transportation of Radioactive and Fissile Materials Other Than Weapons.
AR 55-56	Transportation of Dangerous or Hazardous Chemical Materials.
AR 55-203	Movement of Nuclear Weapons, Nuclear Components and Related Classified Nonnuclear Materiel.
AR 55-228	Transportation by Water of Explosives and Hazardous Cargo.
AR 55-355	Military Traffic Management Regulation.
AR 59-11	Army Use of Logistic Airlift (LOGAIR).
AR 75-15	Responsibilities and Procedures for Explosive Ordnance Disposal.
AR 190-14	Carrying of Firearms.
AR 190-28	Use of Force by Personnel Engaged in Law Enforcement and Security Duties.
AR 385-14	Accident/Incident Report—Shipments of Conventional Explosives and Dangerous Articles by Commercial Carriers.
AR 50-4	Storage and Supply Activity Operations.
AR 740-1	Disposal of Unwanted Radioactive Material.
AR 755-15	Explosives and Demolitions.
FM 5-25	Explosive Ordnance Disposal Unit Operations.
FM 9-15	Military Police Support, Theater of Operations.
FM 19-4	Physical Security.
FM 19-30	Counter guerrilla Operations.
FM 31-16	Physical Security.
ASubjScd 19-30	Military Chemistry and Chemical Agents.
TM 3-215	Technical Aspects of Biological Defense.
TM 3-216	Chemical, Biological, and Radiological (CBR) Decontamination.
TM 3-220	Field Behavior of Chemical, Biological, and Radiological Agents.
TM 3-240	Storage, Shipment, Handling, and Disposal of Chemical Agents and Hazardous Chemicals.
TM 3-250	Operator, Organizational, DS and GS Maintenance Manual: Mask, Chemical-Biological: Field, ABC-M17 and Accessories.
TM 3-4240-202-14	Operator's, Organizational, DS and GS Maintenance Manual: Mask, Chemical-Biological: Special Purpose, M9A1; Mask, Chemical-Biological: Special Purpose, M9 and Accessories.
TM 3-4240-204-14	Operator, Organizational, DS, GS, and Depot Maintenance Manual: Breathing Apparatus, Oxygen Generating, M20.
TM 3-4240-212-14&P	Operator's Organizational, DS, and GS Maintenance Manual (Including Repair Parts and Special Tool Lists) Mask, Chemical-Biological; Aircraft, ABC-M24 and Accessories.
TM 3-4240-219-14	Operator and Organizational Maintenance Manual: Breathing Apparatus, Compressed Air, M15.
TM 3-4240-224-12	Operator and Organizational Maintenance Manual: Mask, Gas, and Organic Vapors, M10 (Including Repair Parts and Special Tool Lists).
TM 3-4240-230-12	Operator and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Mask, Gas, All-Purpose, M11A1.
TM 3-4240-231-12	Operator and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Mask, Gas, Ammonia, M12.
TM 3-4240-232-12	

TM 3-4240-258-14	Operator, Organizational, DS, and GS Maintenance Manual: Mask, CBR: Field M17A1 and Accessories.
TM 3-6665-254-12	Operator and Organizational Maintenance Manual: Detector Kit, Chemical Agent, ABC-M18A2.
TM 9-1300-200	Ammunition, General.
TM 9-1300-206	Ammunition and Explosives Standards.
(C) TM 9-1385-50	Techniques for Explosive Ordnance Disposal (U).
TM 10-277	Protective Clothing, Chemical Operations.
TM 55-315	Transportability Guidance for Safe Transport of Radioactive Materials.
TM 55-602	Movement of Special Freight.
TB 3-4230-207-10	Decontaminating and Reimpregnating Kit, Individual, M13.
TB 9-1300-203/1	Assembly of Explosive Components: Cartridge, 105-mm Howitzer: Gas, Nonpersistent, GB, M360; Projectile, M155-mm Gun: Gas, Nonpersistent, GB or GB Simulant Filled, M122; Projectile 155-mm Howitzer: Gas, Nonpersistent, GB or GB Simulant Filled, M121 or M121A1; Gas, Persistent, VX or VX Simulant Filled, M121A1; Projectile, 8-in. Howitzer: Gas, Nonpersistent, GB or GB Simulant Filled, M426; Gas, Persistent, VX or VX Simulant Filled, M426.
TB CML 73	Rockets, Chemical, 155-mm, M55 (GB or VX Filled), Rocket, Training Dummy, 115-mm, M60, and Rocket, Practice, Simulant, EG, 115-mm, M61.
TB MED 114	Immunization.
TB MED 223	Respiratory Protective Devices.
TB MED 237	Collection and Preparation of Specimens for Shipment to Medical Laboratories.
TB MED 282	Anticholinesterase Intoxication: Pathophysiology Signs and Symptoms, and Management.
SB 3-30	Chemical Materiel (Other Than Class V) Storage Serviceability Standard.
SB 3-4240-7	Respirator, Air Filtering, Paint Spray, Two-Cartridge, M6; Respirator, Air Filtering, Paint Spray, M5; Cartridge, Absorbent, M2; and Filter, Aerosol, M11; Serviceability Standard.

A-3. Miscellaneous Publications

Federal Register, Vol. 33, No. 194, Part II, Department of Transportation Hazardous Materials Regulation Board: Radioactive Materials and Other Miscellaneous Amendments.¹

Code of Federal Regulations:

Title 10, Atomic Energy.¹

Title 14, Aeronautics and Space.¹

Title 33, Port Security.¹

Title 42, Public Health.¹

Title 46, Shipping.¹

Title 49, Transportation.¹

Hazardous Materials Regulations of the Department of Transportation.²

Bureau of Explosives:

Pamphlet No. 6, Illustrating Methods for Loading and Bracing Carload and Less than Carload Shipments of Explosives and Other Dangerous Articles.²

Pamphlet 6A, Illustrating Methods for Loading and Bracing Carload and Less than Carload Shipments of Loaded Projectiles, Loaded Bombs, Etc.²

Pamphlet 6C, Illustrating Methods for Loading and Bracing Trailers and Less-Than-Trailer Shipments of Explosives and Other Dangerous Articles Via Trailer-On-Flat-Car (TOFC) or Container-On-Flat-Car (COFC).²

Airline Tariff Publishers, Inc., Agent: The Official Air Transport Restricted Articles Tariff No. 6-D.³

¹Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

²Bureau of Explosives, RARITA Center, Building 817, Edison, NJ 08817.

³Airline Tariff Publishers, Inc., 1825 K St., NW, Washington, DC 20006.

American Trucking Associations, Inc.:

Dangerous Articles Tariff 14.⁴

Dangerous Article Handling.⁴

Department of Transportation:

Federal Highway Administration, Motor Carrier Safety Regulations.¹

US Coast Guard, CG 108, Rules and Regulations Governing the Transportation of Military
Explosives and Hazardous Munitions on Board Vessels.¹

⁴ American Trucking Associations, Inc., William Herbolt, Issuing Officer, 1616 P St., NW, Washington, DC 20036.



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APPENDIX B
SAMPLE MISSION CHECK LIST
(STANAG 2137)

Mission No. _____
 Date _____

B-1. Escort and Request Data*a. Person Making Request.*

- (1) Full name _____
 (2) Title or position _____
 (3) Organization _____
 (4) Date request initiated _____

b. Security Classification of Cargo. _____*c. Description of Cargo.*

- (1) Item and quantity _____

Weight _____
 Shipping dimensions _____

- (2) Additional items and quantity _____

Weight _____
 Shipping dimensions _____

d. Location of Cargo.

- (1) Location or facility _____
 (2) Building number _____
 (3) Person to contact and telephone number _____

- (4) Schedule or requested date and time for loading of cargo at point of origin _____

e. Destination of Shipments.

- (1) Installation or Facility _____
 (2) Building number _____
 (3) Person to contact and his telephone number _____

f. Special Requirements and/or Additional Instructions _____

 _____*g. Project Chargeable to—*

- (1) Cost center number _____
 (2) Expenditure order number _____

h. Shipping Documents _____

 _____**B-2. Escort and Disposal Section***a. Immunization Required* _____
 _____*b. Special Training Required* _____
 _____*c. Composition of Escort Team.*

NAME

- (1) _____
 (2) _____
 (3) _____
 (4) _____
 (5) _____
 (6) _____
 (7) _____
 (8) _____
 (9) _____
 (10) _____
 (11) _____
 (12) _____

d. Itinerary.

LEAVE	ARRIVE	MODE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

e. Administrative Data.

- (1) Number of days _____
 (2) Shipment of escort kit _____ lb
 _____ cube

(3) Advanced leave authorized _____

NAME _____ DAYS _____

(4) Excess baggage authorized _____ lb

(5) Civilian clothing authorized _____ YES _____ NO

(6) Government weapons authorized _____ YES _____ NO

(7) Transportation modes _____

(8) Formal reports required (annex) _____ YES _____ NO

(9) Designation as official courier _____ YES _____ NO

(10) Escort SOP No. _____

(11) Others _____

f. Road Escorts.

(1) Vehicles to be used and operators

(a) Type _____ Bumper No. _____
USA No. _____
Operators (1) _____ (2) _____
License _____ Date/time _____

(b) Type _____ Bumper No. _____
USA No. _____
Operators (1) _____ (2) _____
License _____ Date/time _____

(c) Type _____ Bumper No. _____
USA No. _____
Operators (1) _____ (2) _____
License _____ Date/time _____

(2) Transportation request (DA Form 55-129) submitted _____
DATE _____

(3) Road clearance numbers _____

g. Air Escorts.

(1) Depart _____ Arrive _____
Flight No. _____

(2) Depart _____ Arrive _____
Flight No. _____

h. Rail Escorts.

(1) Number of cars to be escorted _____

(2) Special cars required:
Guard Car No. _____

i. Sea Escorts. (See special requirement, para B-1f)

B-3. Safety and Security Officers

a. Compatibility of Cargo _____

b. Adequate Vehicles for Cargo _____ YES _____ NO

c. Firefighting Equipment _____
TYPE _____ WEIGHT _____
NUMBER _____

d. Labels, Signs, and Placards.

(1) Labels or signs _____
DESCRIPTION _____

(2) Placards _____
DESCRIPTION _____

e. DOT Permit _____ RAD Physical _____

f. Recommendations _____

g. Cargo Properly Loaded (if applicable) _____ YES _____ NO

(1) DD Form 626 _____
(2) DD Form 836 _____
(3) Toxic aid station notifications _____
(4) Others _____

h. Special Requirements.

(1) Safeguard of classified material _____
(2) Decontaminants _____
(3) Protective clothing or special safety requirements _____

B-4. Administrative Officer _____

(Initials)

a. Travel Orders.

Date requested _____
Requested by _____
Date requested _____
Requested by _____

b. Request for Advance Per Diem Submitted _____

DATE

c. Request for Reservations for Commercial Transportation Tickets.
Date requested _____
Requested by _____

d. Confirmation of Commercial Transportation Tickets and Itinerary.

(1) Depart _____ Arrive _____
Train _____
Flight _____

(2) Depart _____ Arrive _____
Train _____
Flight _____

(3) Depart _____ Arrive _____
Train _____
Flight _____

e. *Credit Cards. Number* _____

f. *DA Form 360 (Telephone Credit Card)* _____

g. *Postal Arrangements Made* _____

h. *Pay Arrangements Made* _____

B-5. Support Officer

(Initials)

a. *Supplies Issued* _____ (DATE) _____ (TIME)

b. *Weapons and Ammunition (If Required)* _____ (DATE) _____ (TIME)

B-6. Team Leader's Check List

a. *Before Leaving.*

- (1) Escort equipment checked _____
- (2) Team members equipment checked _____
- (3) Vehicles checked _____
- (4) Escort equipment properly loaded _____
- (5) Shipping documents _____ YES _____ NO
- (6) Items in the shipping documents accounted for _____
- (7) Briefing of the escort team _____

b. Itinerary.

LOCATION Date/Time

Lv _____
Arr _____
Lv _____
Arr _____
Lv _____
Arr _____

LOCATION Date/Time

Lv _____
Arr _____
Lv _____
Arr _____
Lv _____
Arr _____

LOCATION **Date/Time**

Lv _____
 Arr _____
 Lv _____
 Arr _____
 Lv _____
 Arr _____

c. *Upon Return.*

- (1) All equipment and supplies are returned to supply room _____
- (2) Gasoline and telephone credit cards are returned to place of origin _____
- (3) Imprest funds are returned _____
- (4) DA Form 360 is returned to the Administrative Officer _____
- (5) Debriefed by the Escort and Disposal Officer _____
- (6) Copies of the signed hand receipt for the cargo delivered to E&D Officer _____
- (7) Turn in project check list and report _____
- (8) Return escort procedure book to E&D _____
- (9) Vehicles cleaned and turned in _____
- (10) Explain any delays, incidents, accidents, or unusual events in accordance with unit SOP _____

All requirements of the mission have been complied with.

(Signature)



APPENDIX C

MINIMUM EQUIPMENT GUIDELINES

This appendix is a suggested major equipment list for escorting shipments of chemical and biological agents and radioactive material. This list is applicable to all situations involving these materials and must be used accordingly. Additions must be made for special missions and at the discretion of the escort team leader. This list does not reflect the number of extra protective masks and other protective equipment which might be required to outfit support personnel during emergencies.

Item	Missions		
	Chemical	Biological	Radiological
Mask, Chemical-biological protective, M9A1 (TM 3-4340-204-14)	1/tm mbr	1/tm mbr	1/tm mbr
Mask, Chemical biological protective, ABC-M17 or M17A1 (TM 3-4240-202-14/TM 3-4240-258-14)	As rqr	As rqr	As rqr
Mask, Chemical-biological protective, aircraft, M24 (TM 3-4240-219-14)	As rqr	As rqr	As rqr
Breathing apparatus, oxygen generating, M20 (TM 3-4240-212-15)	As rqr	-----	-----
Breathing apparatus, compressed air, M15 (TM 3-4240-224-12)	As rqr	-----	-----
Hood, toxicological agents, protective, M3	1/ind	1/ind	-----
Hood, protective mask, M6 series	As rqr	As rqr	As rqr
Canister, M11	1/mask	As rqr	-----
Canister, M14	-----	As rqr	As rqr
Canister, quick start	As rqr	-----	-----
Canister, regular, M13	As rqr	As rqr	-----
Elements, filter, M13	As rqr	1/ind	As rqr
Gloves, cotton, impregnated	1 pr/ind	-----	-----
Gloves, toxicological agents, protective	1 pr/ind	1 pr/ind	-----
Gloves, surgeon	-----	2 pr/ind	2 pr/ind
Gloves, leather	1 pr/ind	1 pr/ind	1 pr/ind
Boots, toxicological agents, protective, M2A1	1 pr/ind	1 pr/ind	-----
Boot covers, toxicological agents, protective, M3	1 pr/ind	1 pr/ind	-----
Booties, plastic	-----	-----	As rqr
Socks, wool, impregnated	1 pr/ind	-----	-----
Coveralls, toxicological agents, protective, M3	1 pr/ind	1 pr/ind	-----
Coveralls, white cotton	1 pr/ind	1 pr/ind	1 pr/ind
Underwear, cotton, impregnated	1 pr/ind	-----	-----
Cap, cotton	-----	-----	1/ind
Film badge	-----	-----	1/tm mbr
Dosimeter (hi/lo range)	-----	-----	1/tm mbr
Radiac set (...e.g. AN/PDR-27/AN/PDR-43)	-----	-----	2/team
Radiac set (alphameter)	-----	-----	2/team
Charger dosimeter	-----	-----	1/team
Detector kit, chemical agent	2/team	-----	-----
Sampler kit, biological agent	-----	2/team	-----
Disposable test tube w/swabs	-----	-----	-----
Disposable test tube	-----	-----	-----
Memo pad	-----	-----	-----
Distilled water, 1 qt plastic bottle	-----	-----	-----
Pencils, #2 and grease	-----	-----	-----
Fire extinguisher	As rqr	As rqr	As rqr
One-ton container wrenches, M1 and M2	As rqr	-----	-----
One-ton container valves and plugs	As rqr	-----	-----
Containers for leaking munitions	As rqr	As rqr	-----
Sealants (plaster of paris bandage, epoxy, etc.)	As rqr	As rqr	-----
Bag, waterproof, plastic	As rqr	As rqr	As rqr
Wrench, crescent, adjustable, 12-in	1 ea	1 ea	1 ea

Item	Missions		
	Chemical	Biological	Radiological
Wrench, pipe, adjustable, 10-in	1 ea	1 ea	-----
Shear, tin	1 ea	1 ea	1 ea
Bar, wrecking, 2 in. x .5 in	1 ea	1 ea	1 ea
Saw, hand, cross cut	1 ea	-----	-----
Pliers, 8-in., slip joint	1 ea	1 ea	1 ea
Screwdriver, flat-tip, 10-in	1 ea	1 ea	1 ea
Hammer, claw (carpenter)	1 ea	1 ea	1 ea
Hammer, sledge, 5-lb	1 ea	1 ea	1 ea
Nails, assorted	As rqr	As rqr	As rqr
Axe, single bit	1 ea	-----	-----
Rake, short handle	1 ea	1 ea	1 ea
Shovel, round tip, short handle	1 ea	1 ea	1 ea
Tape, marking	3 rolls	3 rolls	3 rolls
Cutter, banding	1 ea	1 ea	1 ea
Soap, hand	3 bars	3 bars	3 bars
Soap, flakes	1 lg ctn	1 lg ctn	-----
Towel, cloth	As rqr	As rqr	As rqr
Brush, scrub	2 ea	2 ea	2 ea
Broom, straw	1 ea	1 ea	1 ea
Drum, 30-gal	3 ea	3 ea	-----
Stepladder	As rqr	As rqr	As rqr
Marker, contamination placards:			
Radioactive	-----	-----	10 ea
Dangerous	As rqr	As rqr	-----
Poison gas (rail)	As rqr	-----	-----
Poison (road)	As rqr	-----	-----
Explosive	As rqr	-----	-----
Labels:			
Radioactive material classes, yellow-III	-----	-----	10 ea
Other	-----	-----	10 ea
Decontaminants	As per agent	As per agent	-----
First aid kit	1 ea	1 ea	1 ea
Highway warning kit	1/veh	1/veh	1/veh
Flashlight	2 ea	2 ea	2 ea
Lantern	2 ea	w ea	2 ea
Batteries (flashlight and lantern)	As rqr	As rqr	As rqr
Ice picks	-----	As rqr	-----
Blankets, wool	As rqr	As rqr	As rqr

APPENDIX D

LOADING AND STORAGE CHART OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES (RAIL) (STANAG 2137)

The letter X at an intersection of horizontal and vertical columns shows that these articles must not be loaded or stored together; for example detonating fuzes class A, with or without radioactive components, g horizontal column must not be loaded or stored with high explosives b vertical column.																								
		a	b	c	d	e	f	g	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
CLASS A EXPLOSIVES																								
Low explosives or black powder	a			x							x						x	x	x	x	x	x	x	
High explosives or propellant explosives, class A	b			x	x			x			x						x	x	x ^e	x	x	x	x	
Initiating or priming explosives, wet, diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanilidene hydrazine, lead azide, lead styphnate, nitro mannie, nitrosoguanidine, pentaerythrite tetramitate, tetrazene	c	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers	d		x	x		x	x				x ^a						x ^a	x ^a	x ^{ae}	x ^a	x ^a	x	x	
Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell, ammunition for small arms with explosive bullets, or ammunition for small arms with explosive projectiles, or rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles; and boosters (explosive), bursters (explosive), or supplementary charges (explosive) without detonators (c, d)	e			x	x						x						x	x	x	x	x	x	x	
Explosive projectiles, bombs, torpedoes, or mines; rifle or hand grenades (explosive); jet thrust units (JATO), explosive, class A; or igniters, jet thrust (JATO), explosive, class A (c)	f			x	x			x			x						x	x	x	x	x	x	x	
Detonating fuzes, class A, with or without radioactive components	g		x	x		x	x				x						x	x	x	x	x	x	x	

(continued)

LOADING AND STORAGE CHART OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES (RAIL)
(STANAG 2137)

[illegible]

APPENDIX E

CRITERIA FOR INSPECTION OF MOTOR VEHICLES (STANAG 2154)

E-1. General Instructions

All spaces on DD Form 626 (app G) shall be filled in. The following instructions shall be observed in completing DD Form 626.

a. Date. Use the date and hour the carrier's equipment is inspected.

b. Reporting Installation. Insert the name of the installation making the inspection.

c. Origin or Destination. Indicate whether the reporting installation is origin or destination of the shipment.

d. Name of Carrier. Give the full name of the trucking company. Do not use abbreviations or nicknames.

e. Shipment Received From. Enter the name of point of origin.

f. Entering. Indicate whether vehicle was empty or loaded upon arrival at the reporting installation.

g. Name of Driver. Enter the name of the driver of the vehicle presented for inspection (Off-station drivers must be 21 years of age or older.)

h. Driver's State Permit Number. The driver must have a valid state driver's permit. Military service operators must have a valid SF 46, US Government Motor Operator's Vehicle Identification Card.

i. Government Bill of Lading. Enter the GBL number, if applicable.

**j. Doctor's Certificate Dated.* Enter date from certificate. Every commercial driver must have a certificate of physical examination (or a photographically reproduced copy) indicating that the examination has been made within the preceding 12 months. If the certificate indicates that glasses are required, the driver must have them on his person. DOT—formerly ICC—regulations require that the driver be in good physical condition.

k. Type of Vehicle. Indicate the type of vehicle. (Double trailers may be used to transport explosives only if there is complete compliance with paragraphs 293.70(a) through (c) of the DOT Motor Carrier Safety Regulations.)

l. Truck License Number. Indicate any current state license attached to the tractor.

m. ICC (DOT) Number. Enter number of permit shown on side of tractor.

n. Trailer(s) Number and License. Indicate the trailer(s) number, if shown, and any current state license attached to the trailer.

o. Sleeper Cab. Indicate whether the vehicle has a sleeper cab.

p. Equipment. Indicate whether equipment is owned by the presenting carrier or is leased. If it is leased, indicate the name of the owner. (If the vehicle is leased, the owner's name must appear on the side of the tractor.)

q. Approved/Rejected Blocks. Indicate, by checking the appropriate block, whether the vehicle is approved or rejected. If rejected, give reasons on reverse side of form.

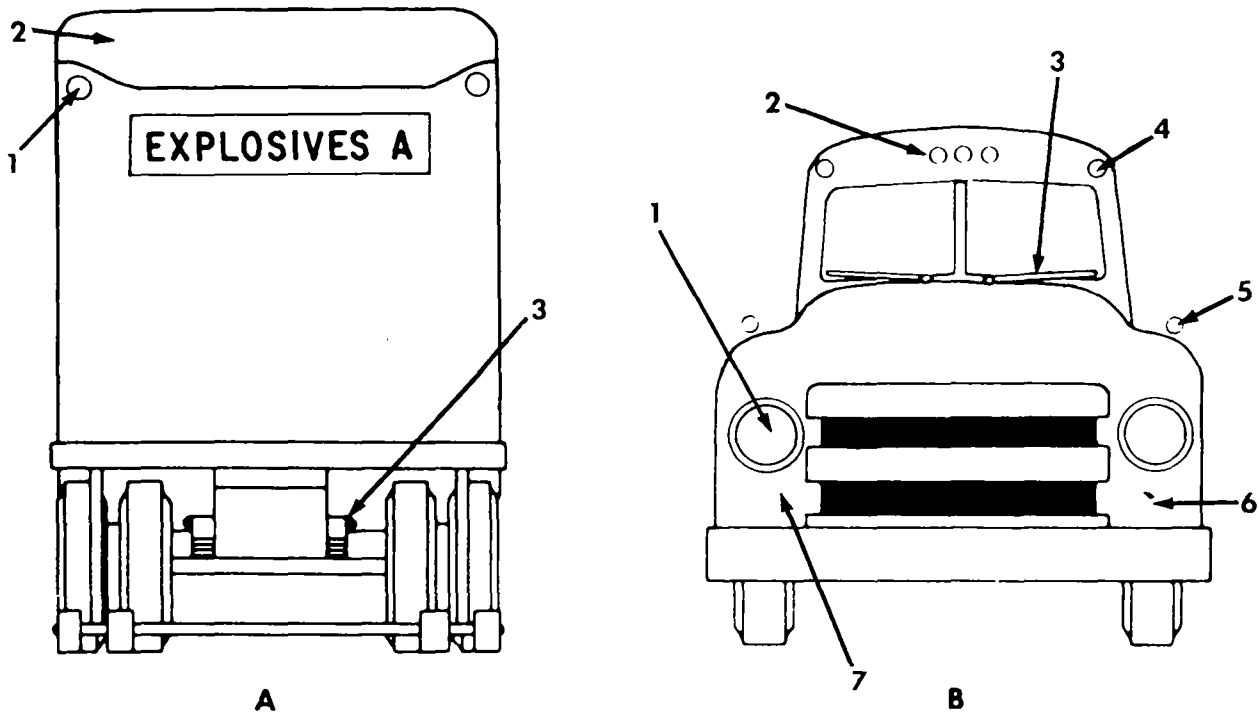
r. Signature (of Inspector). This space shall be signed by the person making the preloading inspection.

s. Signature (of Inspector). This second signature space shall be signed by the person making the loaded vehicle inspection.

t. Signature (of Driver). This space shall be signed by the driver of the inspected vehicle.

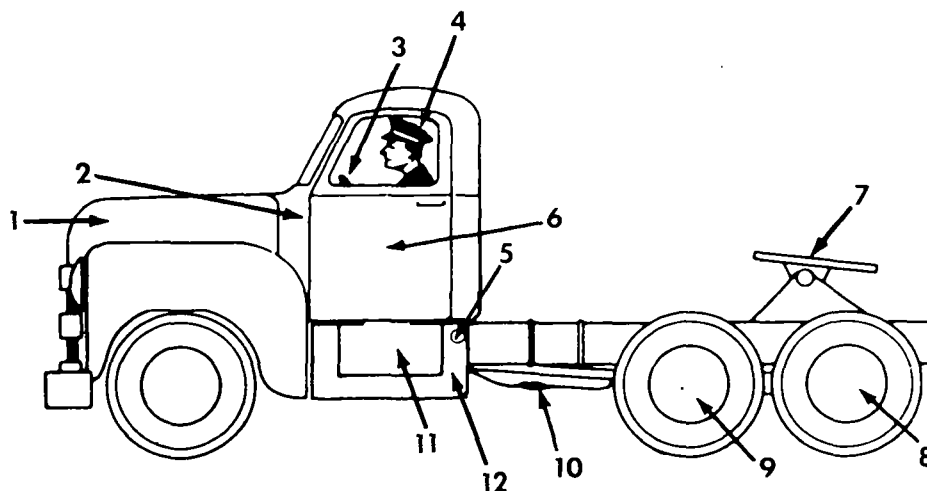
E-2. Criteria for Motor Vehicle Inspections

The criteria specified below should be observed by military activities when inspecting motor vehicles tendered for use in transporting explosives or other dangerous articles. The item numbers correspond to the numbered items on DD Form 626. All items shall be checked as satisfactory or unsatisfactory on DD Form 626, and unsatisfactory conditions shall be explained in the "Remarks" column. Inspectors must exercise sound judgment in estimating satisfactory working condition of parts for which no specific standard of operation can be established. General vehicle inspection requirements are illustrated in figures E-1 through E-5.



- A
1. Front clearance lamps: Amber color; lamps should be operative, clean, and free of cracks.
 2. A fire-resistant and waterproof tarpaulin must be carried on all open equipment.
 3. Springs, suspension hanger mechanism, tension bar assemblies and auxiliary parts should be in good condition and properly lubricated.
- B
1. Headlights shall number at least two and be in good operating condition including the high-low beam.
 2. Identification lamps (bar lights): Amber color; should be operative, clean, and free of cracks.
 3. Two windshield wipers in good operating condition are required. Defroster must be operative when conditions require its use.
 4. Clearance lamps: Amber color; one lamp at each side; should be operative, clean, and free of cracks.
 5. Turn signals. One at each side. Vehicle must have system which will permit two front and two rear signals to flash simultaneously.
 6. Horn must be operative, securely mounted, and of sufficient volume to ensure that it fulfills its intended purpose.
 7. Fog lamps or spotlight not required; however, if installed, they must be operating.

Figure E-1. Tractor-trailer inspection chart (illumination equipment).

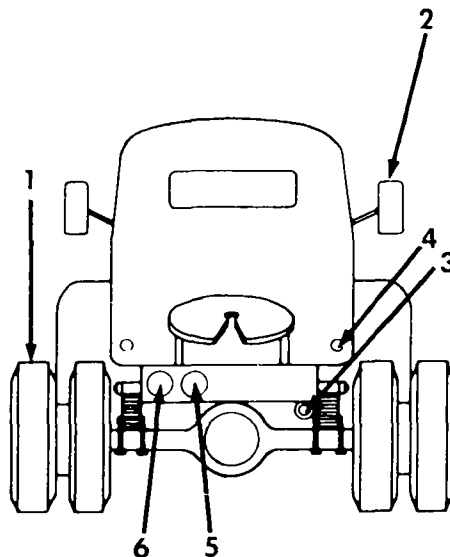


1. Engine, body, cab, and chassis should be clean and free of excessive grease, oil, or mud.
2. Spare fuse and bulb for each type used.
3. Steering mechanism should be in good adjustment, securely mounted, and not leaking lubricant.
4. Driver must have health certificate, operator's license, and copy of lease agreement on his person. He cannot smoke while driving, loading, or unloading. He must receive a copy of the fire-fighting instructions from the loading installation.
5. Fuel tank inlet and line should be free of leaks and securely mounted. Gas cap should have a gasket.
- ★ 6. Fire Extinguishers— Vehicles transporting Class A or Class B ammunition, explosives, poisons, or other dangerous articles must carry one fire extinguisher properly filled, securely mounted on brackets, and readily accessible. Each unit shall use a nonfreezing extinguishing agent. For transportation of Class C explosives, only one extinguisher is required.
7. Fifth-wheel plate and king pin must be in good operating condition. No excessive oil or grease.
8. Brakes must all be operative, including hand brake and air-pressure warning device.
9. Wheel lugs shall be tight and none shall be missing.
10. There shall be no bare wires on either the tractor or trailer. All splices must be in good condition and properly insulated.
11. Highway warning equipment must include at least two clean red cloth or red plastic flags (at least 12 inches square) with adequate standards, and three red electric lanterns or three red emergency reflectors.
12. LPG, butane, and propane fuels are prohibited in explosives area.

Figure E-2. Tractor-trailer inspection chart (engine, body, cab, and chassis).

FLATBED EQUIPMENT

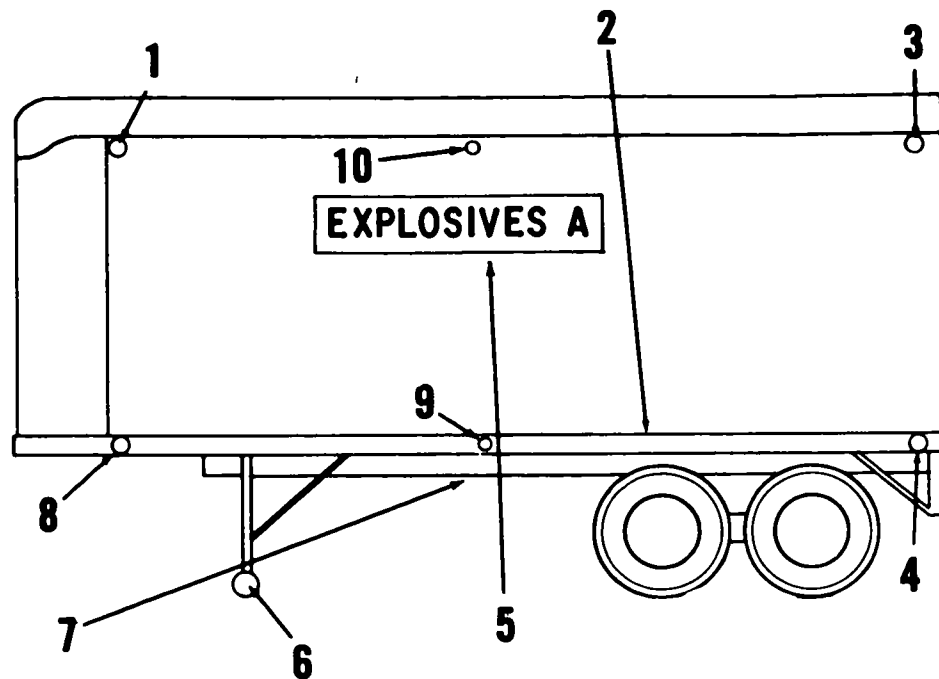
Lighting requirements for flatbeds are same as for vans, except that all top lamps are placed at bed level. Placards must be placed on side of trailer, not attached to load.



1. Tires shall not be smooth nor have cuts or injuries extending into the cord body. Tires should be properly matched.
2. Two rear-vision mirrors are required. They should be clean and free of cracks.
3. Exhaust system shall be in good condition and securely mounted and shall discharge to the rear of the cab, if not vertically, beyond any saddle tanks.
4. Reflector: Red color; one reflector on each side; should be clean and free of cracks.
5. Stop lamp: Red or amber or any shade between; should be operative, clean, and free of cracks.
6. Tail lamp: Red color; should be operative, clean, and free of cracks.

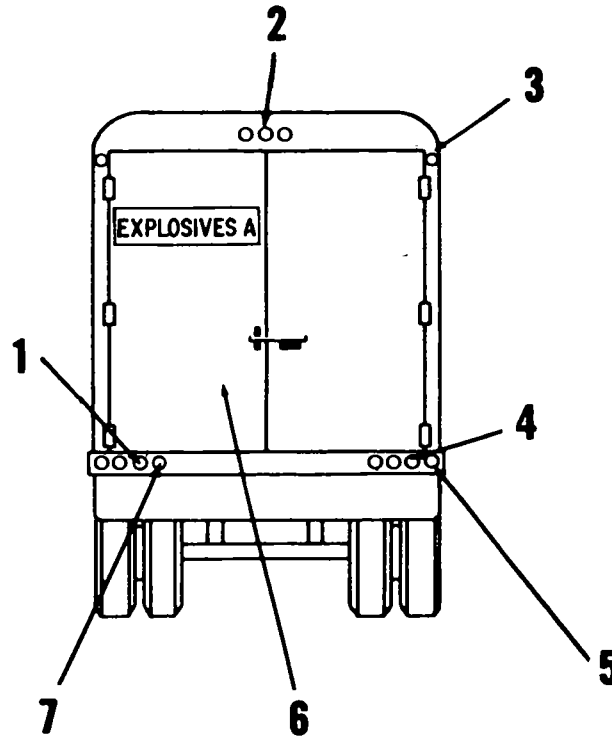
Figure E-3. Tractor-trailer inspection chart (flatbed equipment).

Item No.	Inspection criteria	Item No.	Inspection criteria
1	Engine, body, cab, and chassis clean. Engine and cab compartment must be clean. There shall be no excessive oil or grease, and the cab floor shall be free of debris. Understructure of cab and chassis shall be checked for excessive grease and mud. Tractor doors must not be blocked in any way that could deny the driver free exit.		
2	Steering mechanism. Steering mechanism must be in good condition and be correctly and securely	3	Horn operative. Horn must be securely mounted, operative, and of adequate volume for its purpose. Horn may be operated electrically or by air. Only one horn per vehicle need be operative.
			mounted. Steering gear case must not leak lubricant. Pitman arm must be securely mounted and shall not be bent out of normal shape. Steering system shall be in good adjustment.



1. Front side marker lamps: Amber color; should be operative, clean, and free of cracks.
2. Cargo space shall be clean and free of projecting objects likely to damage cargo. Floors should be tight, free of unnecessary holes, and either be of wood or be lined with nonmetallic material or nonferrous metals, unless otherwise specified by military.
3. Rear side marker lamps: Red color; should be operative, clean and free of cracks.
4. Rear side marker reflectors: Red color; should be clean and free of cracks.
5. One placard shall be displayed on front, both sides, and rear. All placards must have at least 4-inch lettering, except "EXPLOSIVES A" and "EXPLOSIVES B," which must have at least 6-inch reflectorized lettering on contrasting backgrounds. Red-reflecting placards may be used on front. "EXPLOSIVES A" placards are required for all loads that include class A explosives; "EXPLOSIVES B" placards are required for all loads of class B explosives. Placards for commercial vehicles must be furnished by carrier.
6. Landing gear assembly must be operative and must have wheels and other component parts in proper working condition.
7. Spare tire not required. If on vehicle must be in good condition.
8. Front side marker reflectors: Amber color; should be clean and free of cracks.
9. Side marker reflectors: Amber color; should be clean and free of cracks.
10. Side marker lamps: Amber color; should be operative, clean, and free of cracks.

Figure E-4. Tractor-trailer inspection chart (trailer side view).



1. Tail lamp: Red color; should be operative, clean, and free of cracks.
2. Identification lamps. (Height optional)
3. Rear clearance lamp: Red color; should be operative, clean, and free of cracks.
4. Turn signals: White or amber or any shade between; one on each side; both must be operative.
5. Rear clearance reflector: Red color; one reflector at each side; should be clean and free of cracks.
6. Doors shall be tight and able to close securely. Hinges, latches, and safety chains should be in good condition.
7. Stop lamp: Red or amber; should be operative, clean, and free of cracks.

Figure E-5. Tractor-trailer inspection chart (trailer rear view).

Item No.	Inspection criteria	Item No.	Inspection criteria
4	Windshield and wipers. Windshield must be free from breaks, cracks, or defects that would make operation of the vehicle unsafe. Driver's view shall not be obstructed by stickers. Both wiper blades must be in good condition and operate properly. Trucks or truck-tractors that will operate under frost, ice, or snow conditions must be equipped with an operative automatic defrosting device.		spare fuse for each kind and type installed is carried in the vehicle. One spare bulb for each type of electric light used also shall be carried (including sealed-beam headlamp). Adequate tools for changing lights and fuses shall be carried. If vehicle is equipped with circuit breaker, make sure it is working properly.
5	Spare electric fuses available. Check that fuses of correct size are installed, and at least one	6	Rearview mirrors installed. Two rear vision mirrors are required, one on each side. Mirrors shall not be cracked or dirty and

Item No.

Inspection criteria

- shall provide a clear-unobstructed view of the rear along both sides of the vehicle.
- 7 **Highway warning equipment.** This equipment must include either three red electric lanterns in operating condition and two red flags or three red emergency reflectors and two red flags with standards adequate to maintain them in an upright position. Signals produced by flame are forbidden and shall not be carried on vehicles used to transport explosives. Red flags must not be less than 12 inches square.
- 8 **Fire extinguishers.** Vehicles must carry two full fire extinguishers using a nonfreezing extinguishing agent. They must have been inspected and labeled as complying with classifications B and C; and must be securely mounted on brackets and be readily accessible.
- 9 **Lights and reflectors operative.** All lights and switches must be operative, including clearance lights, turn signals, and high-low beam switches. No light shall have a broken lens. Turn-signalling system must have a switch that will cause all four turn signals to flash simultaneously, whether ignition switch is on or off, as a traffic hazard warning. Tail light and stop light may be combined in the same housing if requirements for each are met. Side and front clearance lights and rear and side clearance lights may be combined and use the same light source.
- 10 **Exhaust system.** Exhaust pipe must be securely attached to exhaust manifold; gaskets or packing shall not show evidence of leakage; and the other end of the pipe must be clamped securely to the muffler. The muffler must be in good condition and securely mounted. The tail pipe must be securely clamped to the muffler, properly supported, and unobstructed at its outer end. The exhaust system must discharge at a point to the rear of cab and beyond any saddle fuel tanks on the tractor. No part of the system shall be located where it might burn wires, fuel system, or any combustible part of the vehicle. The entire system shall be kept free of oil or grease accumulations.
- 11 **Fuel used.** Butane, propane, liquid petroleum gas (LPG), and similar fuels are prohibited in explosive areas.
- 12 **Fuel tank, line, and inlet.** Fuel lines must be in good condition and securely mounted. There shall be no defective gaskets or plugged vents on caps. Fuel tanks are not allowed on trailers or semitrailers. Fuel tanks forward of the front axle of power unit are not permitted. Filler necks must be in good condition, securely supported, and not leaking. No part of any fuel tank or intake pipe shall project beyond the overall width of the motor vehicle on which it is mounted. If the tractor is equipped with a selector control valve for fuel feed from auxiliary tanks: (1) the valve shall be installed so that it is

Item No.

Inspection criteria

- within normal reach of the driver, who must be able to operate the valve without taking his eyes from the road or moving from his normal driving position, or (2) the valve shall be so located that the driver must stop the tractor and leave his seat to operate it.
- 13 **Coupling devices—kingpin lock.** The fifth-wheel rocker plate and bed must be in good condition; properly assembled, adequately lubricated, and properly mounted. Kingpin lock shall operate freely and properly, lock securely, and not show excessive wear. Locking devices which can be opened only by a positive manual release are required. Automatic locks are required for vehicles manufactured after 1953.
- 14 **All brakes operative.** Brakes of each vehicle shall be capable of controlling, stopping, and holding it. Each vehicle shall have a mechanical hand brake capable of holding the vehicle under any condition to the limit of traction. Major DOT braking requirements are listed below.
- a. Towing vehicle air and vacuum reservoirs must be so safeguarded by a check valve or similar device against leakage or failure in the connection to the source of air or vacuum that the supply in the reservoir shall not be depleted.
- b. Every towing vehicle must have means for keeping its brakes operative in event of breakaway.
- c. Every vehicle towing an air-brake trailer shall have both an automatic and a manual means of activating the emergency features of the trailer brakes. Every vehicle towing a vacuum-braked trailer must have a second control device for emergency trailer braking.
- d. Air brake systems installed on towed vehicles manufactured after 31 August 1956 must have devices to safeguard the air supply against backflow through the supply line.
- e. Every towing vehicle using vacuum brakes shall have an audible or visible low-vacuum warning device.
- 15 **Landing gear assembly operative.** The landing gear assembly must be in good condition, correctly assembled, adequately lubricated, and properly mounted.
- 16 **Springs and associated parts.** All springs, suspension hanger mechanisms, tension bar assemblies, and associated parts (such as U-bolts, hangers, and shackles) must be in proper adjustment, properly lubricated, and show no signs of fractures or breaks.
- 17 **Tires.** Tires must be properly inflated and free of bruises, breaks, and blisters. Cuts or injuries extending into the cord body, or tread worn smooth in the center, shall be cause for rejection. Stones between dual wheels must be removed. Tires shall be properly matched on dual-equipped tractors and trailers. A spare tire is not required; but,

Item No.

Inspection criteria

if furnished, it shall be inspected in same manner as wheel-mounted tires. A bad tire is cause for rejection. Only pneumatic tires are acceptable.

18 *Cargo space.*

a. Cargo space must be free of projecting bolts, screws, nails, or other objects that might damage any package or container of explosives.

b. All vehicles must be constructed or equipped with adequate cargo-securing devices so that the load may be properly shored and will not penetrate the forward cargo compartment wall when subjected to maximum braking deceleration of the vehicle.

c. Floors must be tight, substantially constructed, and free of unnecessary holes and openings. They must be of wood or have that portion of the interior which is in contact with the load lined either with non-metallic material or nonferrous metals. Skids, wood pallets, and other appropriate loading devices may be considered as flooring and sufficient to meet the stated requirement. When truckload shipments are loaded by the Departments of the Army, Navy, or Air Force and the explosives making up the shipment are not liable to leakage of dust, powder, or vapor which might cause an explosion, such lining is not required. When unboxed, loose, live ammunition is to be carried and there is a possibility of ferrous metal-to-metal contact, floors must be covered with nonferrous metal, wood, or similar nonmetallic material. Floors shall not be permeated with oil, gasoline, or other combustible material.

19 *Electric wiring.* Wiring must be clean and properly secured, and insulation shall not be frayed or otherwise in poor condition. There shall be no uninsulated wires or improper splices in wiring. Connections shall be in accordance with accepted automotive practice. Wiring shall not be located where it can be charred, overheated, or enmeshed in moving parts. Electrical wiring between towing and towed vehicle shall be contained in a cable, or cables, or entirely within another substantially constructed device. Such wiring shall provide sufficient slack between the two vehicles to accommodate all normal motions of the towing and towed vehicle without damage. Wiring must be as far from the fuel system as is practicable. Unless the wire is metal-covered, all holes through which it passes must be either rolled or bushed with rubber or similar material. Wiring shall not be in contact with cargo, even though protected. Electrical connections between vehicles shall not be permanently jointed; a 5- or 7-way plug is required. Wiring shall be grouped wherever possible and supported where necessary.

20 *Tailgates and doors on closed equipment secured.* All hinges must be tight in the body.

Item No.

Inspection criteria

There shall be no cracks or breaks in latches or safety chains. Doors must close securely.

21 *Fire- and water-resistant tarpaulin on open equipment.* When an open-top, stake-body, or flat-bed vehicle is used to transport military explosives, the load must be completely covered by a tarpaulin. The tarpaulin shall be of fire- and water-resistant material and securely fastened to the vehicle so as to fully protect the load from sparks, fire, and moisture. No tarpaulin is required when the shipment is packed in metal or wooden containers that have been tested and proved to be fire-resistant and waterproof. When military motor vehicles are used to transport explosives over public highways, compliance with these requirements is obligatory. On post, military motor vehicles may be exempt from the tarpaulin requirement during clear weather, but not during inclement weather.

22 *Any other defects (specify).* Any defect not listed elsewhere on DD Form 626 but considered by the inspector as disqualifying shall be described specifically on the reverse side of the form. Receiving activities shall report nonreceipt of DD Form 836, Special Instructions for Drivers (app G) under this item.

23 *Mixtures of material prohibited by DOT regulations are not loaded onto this vehicle.* Explosives or other dangerous articles that are prohibited from being loaded, transported, or stowed together are shown in the chart in appendix D.

24 *Load is secured to prevent movement.* Containers must be arranged so that they cannot be damaged or damage others in transit. Different parts of a load which might damage each other shall be safely segregated, secured, and separated by walls or other suitable means.

25 *Weight is properly distributed and vehicle is not overloaded.* Prior to loading, the carrier or driver shall furnish information as to how the weight of the load will be distributed within the vehicle. In no case shall the maximum gross axle load exceed that allowed by the states in or through which the shipment will move.

26 *Seals(s) applied to closed vehicle. Fire- and water-resistant tarpaulin applied on open vehicle.* Sealing requirements must be closely adhered to. Tarpaulin requirements are given in item 21 above.

27 *Special Instruction for Motor Vehicle Drivers (DD Form 836) received by driver.* The blanks on DD Form 836 shall be filled in by the load inspector, safety officer, or traffic manager to suit the cargo being hauled. DD Form 836 shall be given to the driver of the vehicle and shall accompany the load to its destination. Additional instructions shall be given the driver, as applicable, concerning seal breakage; procedures to be followed in

Item No.

Inspection Criteria

28

event of delays, accidents, or breakdowns en route; and interchange of equipment.

Copy of vehicle inspection (DD Form 626) furnished driver. The driver shall receive a copy of the Inspection Report for his vehicle when a truckload shipment is involved, whether or not the vehicle is accepted or rejected. If the vehicle is accepted, he shall deliver the report, together with the cargo document and other shipping papers, to the receiving activity. If his equipment is interchanged, he shall give his copy of the Inspection Report to the interchange driver. In the event the vehicle is rejected, the driver shall be given a copy of the report for record purposes.

Item No.

Inspection Criteria

29

Proper placards applied. This item shall not be checked when the vehicle is loaded with Class C ordnance material. For Class B and C explosives, vehicles shall be placarded with four reflecting-type placards. Detailed placarding data are presented in Tariff No. 23.

30

Shipment made under DOT Special Permit No. 868. Only classified explosives shipments are made under this special permit. Checking this item signifies that the shipment was loaded in compliance with the carrier's advice on maximum weight and that the driver has not inspected the load. The driver is relieved from certifying to items 23, 24, and 25.



APPENDIX F

CRITERIA FOR INSPECTION OF RAILROAD CARS

(for NAVORD Form 8023/3, which is used by only Navy and Marine Corps but may be used as a guide by other services.)

The following criteria shall be observed by naval activities for the inspection of railroad cars tendered for use in transporting ammunition, explosives, or other dangerous articles. The item numbers listed below correspond to the numbered items on NAVORD Form 8023/3, Railroad Car Inspection Report (fig F-1).

Item No.	Inspection criteria	Item No.	Inspection criteria
1	<i>Air and hand brakes.</i> Brakes must be serviceable. If possible, air pressure should be checked.	11	and shall not have cracks or show signs of deterioration.
2	<i>Journal boxes, trucks, springs.</i> Journal boxes must be properly packed, oiled, and covered. Trucks and springs must be in good operating condition.	12	<i>Hoses.</i> There shall be no broken fabric or spiral cracks in hoses.
3	<i>Placard holders, door keepers.</i> Placard holders and door keepers must be installed in the proper places.	13	<i>Cargo space.</i> Cars must be swept clean before loading. All dunnage or debris must be removed.
4	<i>Roof.</i> Any decayed spots or broken boards must be covered or repaired. A generally decayed roof shall be cause for rejection. Running boards must be in good condition.	14	<i>Automobile loading device.</i> Cars having automobile loading devices shall not be used unless such devices are securely attached to the roof by supplementary fastenings.
5	<i>Doors.</i> Doors must shut securely. If stripping is necessary, it shall be installed on the inside and fastened to the door frame. Hasp fastenings must be examined with doors closed and secured. Doors shall be cleated if necessary to keep them from shifting.	15	<i>Marking of items or packages.</i> All items or packages must be in good condition and marked in accordance with DOT and other applicable regulations. All items in less-than-carload shipments shall bear the name and address of the receiving activity.
6	<i>Floor, sidewalls, and ends.</i> There shall be no loose, decayed, broken, or missing boards. Any such defects must be repaired before loading. There shall be no projecting nails or metal pieces which could puncture or damage the cargo.	16	<i>Load properly shored.</i> The load must be properly shored, braced, and otherwise in conformance with the requirements of Bureau of Explosives Pamphlets 6 and 6A, WR-52, and OP 2140, as applicable.
7	<i>Floor plates.</i> All metal floors and floor plates must be completely covered with wood, plywood, or composition sheets of sufficient strength and thickness to prevent contact between the plates and containers. Such covering is not required when carload shipments are loaded by naval activities and the cargo is of such a nature that it is not susceptible to leakage of dust, powder, or vapor which might cause an explosion.	17	<i>Mixture of explosives.</i> The shipment shall not contain any combination of explosives or other dangerous articles which are prohibited by DOT regulations from being loaded, transported, or stored together.
8	<i>King and draft bolts.</i> King and draft must be covered with sound pieces of wood which must be spiked to the floor. The ends of the wood must be beveled.	18	<i>Car not overloaded.</i> The load limit shown on the outside of the car shall not be exceeded, and the load shall be properly distributed.
9	<i>Wheels and flanges.</i> There shall be no flat spots, cracks, or other defects. Gages should be used to inspect wheels.	19	<i>Seals.</i> The car must be sealed as required, and the proper seal notions must be attached to the car. For shipments of classified materiel, a tag enclosed in waterproof material must be attached to each seal.
10	<i>Couplings.</i> Couplings shall be properly mounted	20	<i>Placards and certificates.</i> Railroad Car Certificates and applicable placards must be attached to the car.
			<i>DOT Special Permit No. 868.</i> Under this permit, DOT does not require the carrier to inspect the loaded car when the shipment contains classified material. In checking this item, the shipping or receiving activity shall indicate that the carrier has no responsibility for the loading.

RAILROAD CAR INSPECTION REPORT

NAVORD FORM 8023 3 (REPORTS CONTROL SYMBOL 8023-3)

DATE 5 March 1971

FOR BOX CARS TRANSPORTING AMMUNITION, EXPLOSIVES,
AND OTHER DANGEROUS ARTICLES.

NAME OF CARRIER

B&O Railroad

ORIGIN

NAD Earle, N.J.

DESTINATION

NAD Crane, Ind.

INCOMING

OUTGOING

CAR NUMBERS

B&O 100001

REPORTING ACTIVITY

NAD Earle, N.J.

NOTE: ALL ITEMS MUST BE CHECKED ON ALL OUTGOING AND INCOMING CARS.

ITEM	CHECK APPROPRIATE COLUMN	SATIS- FACTORY	UNSATIS- FACTORY	REMARKS
1	AIR AND HAND BRAKES	X		
2	JOURNAL BOXES, TRUCKS, SPRINGS	X		
3	PLACARD HOLDERS · DOOR KEEPERS	X		
4	ROOF	X		
5	DOORS	X		
6	FLOOR, SIDEWALKS, AND ENDS	X		
7	FLOOR PLATES	X		
8	KING AND DRAFT BOLTS	X		
9	WHEELS AND FLANGES	X		
10	COUPLINGS	X		
11	HOSES	X		
12	CARGO SPACE	X		
13	AUTOMOBILE LOADING DEVICE	X		

SAMPLE



ACCEPTED



REJECTED

14	MARKING OF ITEMS OR PACKAGES	X		
15	LOAD PROPERLY SHORED	X		
16	MIXTURE OF EXPLOSIVES	X		
17	CARS NOT OVERLOADED	X		
18	SEALS	X		
19	PLACARDS AND CERTIFICATES	X		
20	ICC SPECIAL PERMIT NO. 868			Not applicable

PRE-LOAD INSPECTOR'S SIGNATURE

/s/ A. B. Smith

LOAD INSPECTOR'S SIGNATURE

/s/ J. A. Howe

8-40*

Figure F-1. NAVORD Form 8023/3, Railroad car inspection report.

(Presently used by Navy and Marine Corps only; may be used as a guide by other services.)

APPENDIX G

SAMPLE FORMS USED FOR TRANSPORTATION OR HANDLING OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES

Form number	Figure	Title	Use
DD Form 6	G-1	Report of packaging and handling deficiencies.	Report deficiencies resulting from improper preservation, packaging, marking, or handling.
DD Form 250 ...	G-2	Material inspection and receiving report.	Ship material from vendor to Government installation. Provide for recording inspection results, establishing accountability, and initiating payment to vendor.
DD Form 626 ...	G-3	Motor vehicle inspection report (transporting hazardous material).	Report results of inspection of motor vehicles used, or to be used, for transporting E&ODA (Class A or B ammunition and explosives) over public highway.
	(1) Coming in.		
	(2) Going out.		
DD Form 836 ...	G-4	Special instructions for motor vehicle drivers.	Issue instructions to drivers of commercial and military vehicles for transporting E&ODA for the military departments over public roads in CONUS.
DD Form 836-1 .	G-5	Briefing for aircraft commanders transporting explosives or other dangerous articles.	Brief aircraft commanders who are to transport E&ODA by air within CONUS for military departments.
			(Note. No longer required for military aircraft.)
DD Form 1348-1A.	G-6	Single-line item release/receipt document.	a. Release document from distribution point to consignee (as a result of requisition). b. Release document for retrograde material or interstation movements. c. Receipt document for consignee.
DD Form 1384 ..	G-7	Transportation control and movement document.	a. Provide advance notice of E&ODA shipments to consignee and transshipment points. b. Basic control document for movement of E&ODA within DOD transportation system.
DD Form 1387 ..	G-8	Military shipment label	a. For all shipments to be moved in DOD air transport system. b. For other than air shipments when total area of transport data side of container is less than 150 sq in., or when stenciling container is impossible.
DD Form 1387-1.	G-9	Military shipping tag	Mark items when impossible to stencil or label.
DD Form 1387-2.	G-10	Special handling data/certification	Ship hazardous materials, biologicals, or classified material to certify that contents of containers are properly described by name and are packed, marked, and in proper condition for shipment.
Standard Form 91.	G-11	Operator's report of motor-vehicle accident.	Report any accident involving a Government vehicle.

Form number	Figure	Title	Use
Standard Form 361.	G-12	Discrepancy in shipment report	Report over, short, astray, loss of, or damage to E&ODA shipments; improper loading, or blocking and bracing of the load; improper handling by carrier; improper placarding; and other transportation discrepancies.
Standard Form 1103.	G-13	US Government bill of lading	a. Procure transportation and related services from commercial carriers. b. Shipping document for E&ODA moving by commercial carrier.

REPORT OF PACKAGING AND HANDLING DEFICIENCIES			1. DATE REPORT PREPARED 5 Mar 71	REPORT CONTROL SYMBOL AMC-137																
2. TO: (Include ZIP Code) DCASR 3100 Maple Dr., N.E. Atlanta, Ga 30305			3. FROM: (Reporting Activity) (Include ZIP Code) Commanding Officer Anniston Army Depot ATTN: AMXAN-SV Anniston, Alabama 36201																	
4. CONSIGNOR (Name, Address, including ZIP Code) Dell Industries Waycross Machine Shops Division 1000 Garlington Waycross, Georgia 31501			5. CONTRACT, PURCHASE ORDER NUMBER OR TCN F4260069C3117																	
8. FEDERAL STOCK NUMBER 1325-702-3713-E969			9. DATE SHIPPED 5 Feb 71 through 13 Feb 71	10. DATE RECEIVED 14 Feb 71 through 19 Feb 71																
11. MODE OF TRANSPORTATION Railcar			12. BILL OF LADING NUMBER See Below	13. MONETARY VALUE																
14. FUND CITATION FOR REPAIRS			15. TYPE OF DEFICIENCY ☐ PACKING ☐ MARKING ☐ PRESERVATION OR PACKAGING ☐ STOWAGE OR HANDLING																	
16. NUMBER OF CONTAINERS AND ITEMS				17. ESTIMATED COST OF CORRECTING DEFICIENCY \$117.00																
	a. RECEIVED	b. INSPECTED	c. UNSATISFACTORY																	
CONTAINERS		3	3																	
ITEMS		240	4																	
18. DESCRIPTION OF DEFICIENCY IN DETAIL																				
1. Bombs were received w/o adequate center gates in boxcars. Photographs shown are only of cars in which damage was noted. Blocking was typical and noted in all cars received on this shipment. In cases listed below load had shifted, and broken the upright 2" x 6" blocking against the cars cross members. <table border="1"> <thead> <tr> <th>Car No.</th> <th>B/L No.</th> <th>Remarks</th> <th>Doc No.</th> </tr> </thead> <tbody> <tr> <td>ACL 37713</td> <td>E8594656</td> <td>Broken Uprights - Damaged Boxes</td> <td>FW202692752001</td> </tr> <tr> <td>SCL 637158</td> <td>E8594658</td> <td>Broken Uprights - Damaged Boxes</td> <td></td> </tr> <tr> <td>SCL 637831</td> <td>E8594661</td> <td>Broken Uprights - Damaged Boxes</td> <td></td> </tr> </tbody> </table> Other cars received on this document were w/o damage (Car No. ACL 37180, SCL 638443, and SCL 21636). 2. DCASR (Mr. Wilson) at Atlanta was notified of the problem by telephone. An inspection was performed to determine extent of damage. Photos are attached. Since the flimsy construction of the skidded crate contributed to the damage an UNMR is also being submitted. 3. Cost of repair is estimated as follows: Labor - \$ 75.00 Material - 25.00 Replace bombs - 17.00 TOTAL \$117.00					Car No.	B/L No.	Remarks	Doc No.	ACL 37713	E8594656	Broken Uprights - Damaged Boxes	FW202692752001	SCL 637158	E8594658	Broken Uprights - Damaged Boxes		SCL 637831	E8594661	Broken Uprights - Damaged Boxes	
Car No.	B/L No.	Remarks	Doc No.																	
ACL 37713	E8594656	Broken Uprights - Damaged Boxes	FW202692752001																	
SCL 637158	E8594658	Broken Uprights - Damaged Boxes																		
SCL 637831	E8594661	Broken Uprights - Damaged Boxes																		
19. COPIES OF THIS REPORT SENT TO: (Include ZIP Code) Cdr, OOAMA, Hill AFB, ATTN: OOSPCA, OOGAM Ogden, Utah 84401 HQ AFLC ATTN: MCTE Wright Patterson AFB, Ohio 45433			20. ACTION BY REPORTING INSTALLATION ☐ REPACKED ☐ RE-MARKED ☐ CONTAINER REPAIRED ☐ REPRESERVED OR REPACKAGED ☐ REPORT OF SURVEY INITIATED ☒ OTHER (Specify) Held pending disposition																	
21. TYPED NAME AND TITLE OF APPROVING OFFICIAL R. J. BANNISTER Chief, Surveillance Division			22. SIGNATURE																	
			23. DATE 5 Mar 71																	

DD FORM 6
1 DEC 66

EDITION OF 1 FEB 60, IS OBSOLETE.

Figure G-1. DD Form 6, Report of packaging and handling deficiencies.

INSTRUCTIONS

1. This form is to be prepared as authorized by AR 700-58, NAVSANDA Publication 378, AFR 71-4 and MCO P-4030 and DSAR 4145.8.

2. This form is used to report packaging and handling deficiencies. It will be used in reporting unsatisfactory preservation, packing, packaging or marking and excessive preservation, packaging, or packing. Stowage and/or handling information will be included when it appears that these factors have contributed to the preservation, packaging, and/or marking deficiencies being reported.

3. Fill in all appropriate spaces. Use additional sheets as necessary.

4. Describe in detail the type of preservative used, method of packaging, type of shipping container, or method of loading as appropriate. Type of deficiency check on front of form will be described in detail using the corresponding list of typical deficiencies appearing below. Include information to indicate possible cause of deficiency and recommend corrective action.

5. When practicable, report the estimated cost of correcting deficiency. This cost should reflect repair of damaged item and necessary preservation, repackaging, repacking or re-marking.

6. For purpose of clarity, photographs or sketches will be included whenever appropriate. Photographs are preferred and should include a ruler or other suitable scale to indicate relative dimensions. Where photographs are not available, sketches with dimensions should be furnished. When utilized, a complete set of photographs or sketches will accompany each copy of the report.

7. This form when filled out will not be furnished to either the commercial contractor or carrier.

8. This form will not be used for reporting overages, shortages, losses while shipment is in the hands of the carrier, improper documentation, shipment of incorrect items, technical failures, defective items or for rejecting shipments. Reports for failure of carrier facilities will be submitted in accordance with applicable regulations.

SAMPLE

TYPICAL DEFICIENCIES TO BE CONSIDERED IN PREPARING REPORT

A. PRESERVATION OR PACKAGING

No preservative
Improper preservative
Preservative improperly applied
Corrosion
Contamination
Package improperly sealed
Inadequate blocking or cushioning
Nonspecification materials used
Excessive preservation or packaging

B. PACKING

Container overloaded
Container crushed
Container wracked
Container punctured
Wire or strap broken or loose
Straps inadequate or inadequately fastened
Frame members failed
Inadequate blocking, bracing or cushioning
Cleats broken
Ends knocked out
Sheathing broken
Boards split
Nails pulled
Fiberboard panels torn
Improper type container used
Container not waterproofed
Nonspecification materials used
Case liner damaged or unsealed
Container came open
Excessive packing or waste space

C. MARKING

Old marking not obliterated
Marking not legible
Tags or labels not waterproofed
Inadequate packing list protector
Incorrect or incomplete marking
Markings improperly applied

D. STOWAGE OR HANDLING

Load improperly trimmed
Center of gravity not considered
Sling damage
Improper stowing
Improperly arranged load
Improper dunnaging
Load not properly nested
Inadequate tie down or lashing
Steel strapping failure
Improper blocking or bracing
Inadequate bulkhead or gate
Inadequate doorway protection

MATERIAL INSPECTION AND RECEIVING REPORT		1 PROC INSTRUMENT IDEN (CONTRACT)		1 ORDER NO	8 INVOICE	7 PAGE	OF
		F4260069C3117			NO	1	1
				DATE		8 ACCEPTANCE POINT	
						S	
2 SHIPMENT NO	3 DATE SHIPPED	4 B/L	5 DISCOUNT TERMS				
DIM0007	71 Mar 12	TCN E8594661	K				
9 PRIME CONTRACTOR DELL INDUSTRIES WAYCROSS MACHINE SHOPS DIVISION 1000 Garlington Waycross, Georgia 31501		10 ADMINISTERED BY DCASR 3100 Maple Dr. N.E. Atlanta, Georgia 30305	CODE S1102A				
11 SHIPPED FROM (if other than 9) SEE BLOCK 9		CODE	FOR	12 PAYMENT WILL BE MADE BY DISBURSING OFFICER DCASR 3100 Maple Dr. N.E. Atlanta, Georgia 30305		CODE S1102A	
			S				
13 SHIPPED TO TRANSPORTATION OFFICER ANNISTON ARMY DEPOT ANNISTON, ALABAMA 36201		CODE	14 MARKED FOR Contract F4260069C3117 FW202692752001		CODE		
15 ITEM NO	16 STOCK/PART NO (Indicate number of shipping containers, type of container, container number.)	DESCRIPTION		17 QUANTITY SHIP C / REC O*	18 UNIT	19 UNIT PRICE	20 AMOUNT
1	1325 702 3713 E969 25 lb. practice bomb BDU 33/B 100 boxes mfg lot DIW-1-10-11-12-13			8000	a	4.25	34,000.00
SAMPLE							
21 PROCUREMENT QUALITY ASSURANCE				22 RECEIVER'S USE			
☐ POA ☐ A ORIGIN ACCEPTANCE of listed items has been made by me or under my supervision and they conform to contract, except as noted herein or on supporting documents. 71 Mar 12 / s/Wm H. Wiggins DATE SIGNATURE OF AUTH GOVT REP TYPED NAME Wm H. Wiggins AND OFFICE S1102A				☐ POA ☐ B DESTINATION ACCEPTANCE of listed items has been made by me or under my supervision and they conform to contract, except as noted herein or on supporting documents. 3-19-71 / s/R. G. Snyder DATE RECEIVED SIGNATURE OF AUTH GOVT REP TYPED NAME AND OFFICE *If quantity received by the Government is the same as quantity shipped, indicate by (✓) mark; if different, enter actual quantity received below quantity shipped and encircle.			
23 CONTRACTOR USE ONLY							

MOTOR VEHICLE INSPECTION (TRANSPORTING HAZARDOUS MATERIAL)						REPORT CONTROL SYMBOL	
COL. NO.		ORIGIN		DESTINATION			
NAME OF CARRIER		Leonard Trucking System		Leonard Trucking System			
NAME OF DRIVER		David E. Campbell		David E. Campbell			
DATE AND HOUR		0800, 5 March 19		1300, 5 March 19			
INSTALLATION/ACTIVITY		Anniston Army Depot, AL		Redstone Arsenal, AL			
DRIVER'S STATE PERMIT NO.		4730131 Alabama		4730131 Alabama			
DOCTOR'S CERTIFICATE & DATE		JCA 3945, 27 January 19					
VEHICLE							
TYPE OF VEHICLE		TRUCK NUMBER		TRAILER NUMBER		DEEPER CAD	
☐ TRUCK ☐ TRUCK AND PULL TRAILER ☐ TRACTOR AND DOUBLE TRAILERS ☒ TRACTOR AND CLOSED SEMI-TRAILER ☐ TRACTOR AND FLAT-DECK TRAILER		ORIGIN ANAD 174 DESTINATION ANAD 174		ORIGIN ANAD T-174 DESTINATION ANAD T-174		☐ YES ☒ NO VALID LICENSE ☐ YES ☒ NO I.C.C. NUMBER 19227	
NOTE: All of the following items shall be checked on empty equipment prior to loading. Items with an asterisk(*) shall be checked on incoming loaded equipment.							
ITEM NO.	CHECK APPROPRIATE COLUMN (See reverse side for explanatory notes)	ORIGIN		DESTINATION		REMARKS (Explain unsatisfactory items; use reverse side if necessary)	
		OAT	UNSAT	SAT	UNSAT		
1.	ENGINE, BODY, CAD AND CHASSIS CLEAN	X		X			
2.	STEERING MECHANISM	X		X			
3.	HORN OPERATIVE	X		X			
4.	WINDSHIELD AND WIPERS	X		X			
5.	OPARE ELECT. FUSES AVAILABLE	X		X			
6.	REAR VIEW MIRRORS INSTALLED	X		X			
7.	HIGHWAY WARNING EQUIPMENT	X		X			
8.	FULL FIRE EXTINGUISHER INSTALLED	X		X			
9.	LIGHTS AND REFLECTORS OPERATIVE	X		X			
10.	EXHAUST SYSTEM	X		X			
11.	FUEL USED (LP Gas Prohibited)	X		X			
12.	FUEL TANK, LINE AND INLET	X		X			
13.	COUPLING DEVICES - KINGPIN LOCK	X		X			
14.	ALL BRAKES OPERATIVE	X		X			
15.	LANDING GEAR ASSEMBLY OPERATIVE	X		X			
16.	SPRINGS AND ASSOCIATED PARTS	X		X			
17.	TIRES	X		X			
18.	CARGO SPACE	X		X			
19.	ELECTRIC WIRING	X		X			
20.	TAIL GATE AND DOORS SECURED	X		X			
21.	FIRE AND WATER RESISTANT TARPULIN	X		X			
22.	ANY OTHER DEFECTS (Specify)	X		X			
☒ APPROVED (If rejected give reasons on reverse under "Remarks". Equipment shall be approved if deficiencies are corrected prior to loading.) ☐ REJECTED		SIGNATURE (of Inspector) ORIGIN S/John R. Taylor		SIGNATURE (of Inspector) DESTINATION S/A. G. Ramsey			
ITEMS TO BE CHECKED PRIOR TO RELEASE OF LOADED VEHICLE						ORIGIN	DESTINATION
23.	MIXTURES OF MATERIAL PROHIBITED BY DOT REGS. ARE NOT LOADED ONTO THIS VEHICLE					X	X
24.	LOAD IS SECURED TO PREVENT MOVEMENT					X	X
25.	WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERLOADED					X	X
26.	SEAL(D) APPLIED TO CLOSED VEHICLE, FIRE AND WATER RESISTANT TARPULIN APPLIED ON OPEN VEHICLE					X	X
27.	SPECIAL INSTRUCTIONS (DD Form 626) FURNISHED DRIVER					X	X
28.	COPY OF VEHICLE INSPECTION (DD Form 626) FURNISHED DRIVER					X	X
29.	PROPER PLACARDS APPLIED					X	X
30.	SHIPMENT MADE UNDER DOT SPECIAL PERMIT NUMBER 060					X	X
SIGNATURE (of Inspector) ORIGIN S/John R. Taylor				SIGNATURE (of Driver) ORIGIN			
SIGNATURE (of Inspector) DESTINATION S/ A. G. Ramsey				SIGNATURE (of Driver) DESTINATION			

DD FORM 626
1 JUN 72

REPLACES EDITION OF 1 SEP 60, WHICH IS OBSOLETE.

Figure G-3. DD Form 626, Motor Vehicle Inspection Report (Origin and Destination)

Figure G-3(1)—Continued is deleted.

Figure G-3(2). DD Form 626, Motor Vehicle Inspection Report (Going Out) is deleted.

Figure G-3(2) — Continued is deleted.
(Next page is G-10.)

SPECIAL INSTRUCTIONS FOR MOTOR VEHICLE DRIVERS		DATE
TO: (Carrier's Name and Trailer Number) Trucking Firm		FROM: (Installation Issuing Instructions) ANNISTON ARMY DEPOT ANNISTON, ALA. 36201
BILL OF LADING NUMBER	THIS TRUCK IS LOADED WITH (Commodity description)	
TYPE PLACARDS REQUIRED EXPLOSIVE	EXPLOSIVE PROJECTILES FOR CANNON CLASS "A"	
IN CASE OF FIRE 1. If any part of the vehicle outside of actual contents catches fire, take vehicle to a clear or uninhabited area, if practicable, and/or attempt to put fire out immediately with hand extinguishers or other available means. If practicable, ask someone to notify the fire department. Call to the attention of fire or police personnel at the scene of the fire the information on this form. 2. Fires may be fought until the flames reach the cargo, at which time firemen and other personnel should be withdrawn to a safe distance, as noted in 5 and 6 below. 3. If in convoy, other trucks proceed to safe distance. 4. Water may be used on this cargo ☒ Yes ☐ No (See Other Specific Precautions or Instructions below) 5. Firemen should not approach closer than <u>1200</u> feet* from the fire when the fire has reached the cargo. (See Other Specific Precautions or Instructions below) 6. Public should not approach closer than <u>2000</u> feet* from fire. 7. As soon as practical, notify the nearest military installation.		IN CASE OF ACCIDENT 1. Set brake and block vehicle to prevent movement. 2. Post flags by day, and red electric lanterns or reflectors by night, warning traffic approaching from each direction. 3. Call for ambulance, if necessary. 4. Notify nearest police. 5. Notify nearest military installation if cargo is damaged. ADDITIONAL NOTIFICATION REQUIRED (By phone or wire as soon as possible) CONSIGNOR OR CONSIGNEE
		IN CASE OF BREAKDOWN 1. Do not attempt to tow loaded vehicle. 2. Post flags by day and red electric lanterns by night, warning traffic from each direction.
GENERAL PRECAUTIONS		
1. While operating over public roads, keep at least 300 feet from trucks loaded with explosives or other dangerous articles, a greater minimum distance must be maintained if required by state or municipal regulations. 2. Protect the public from the hazards of the cargo. 3. Do not allow smoking or use of matches or lighters in or near the vehicle. 4. Obey all state and local traffic regulations. 5. Do not exceed posted speed limits.		6. Stop at all railroad crossings. 7. Use designated routes. Whenever possible avoid congested residential or business areas. 8. Do not permit unauthorized persons to ride on vehicles. 9. At other than carrier rest stops or interchange points, select safe parking space at stopping locations designated by the carrier. Vehicles carrying explosives should not group together at these stopping locations.
OTHER SPECIFIC PRECAUTIONS OR INSTRUCTIONS		
PREPARE TO FIGHT INCIPIENT FIRES STARTED BY EXPLOSION SAMPLE		
These instructions must be transferred to each subsequent driver for turn-in at final destination. If more than 3 drivers are involved, the additional signatures should be made on an extra sheet and attached hereto.	SIGNATURE OF SHIPPER REPRESENTATIVE /s/ WOODROW W. OWENS, TO, TA FOR TO	SIGNATURE OF FIRST DRIVER
	SIGNATURE OF SECOND DRIVER	SIGNATURE OF THIRD DRIVER
* The distances shown are minimum; greater distances should be used whenever possible		

DD FORM 836

1 MAY 71

REPLACES EDITION OF 1 JUN 66 WHICH MAY BE USED

Figure G-4. DD Form 836, Special instructions for motor vehicle drivers.

BRIEFING FOR AIRCRAFT COMMANDERS TRANSPORTING EXPLOSIVES OR OTHER DANGEROUS ARTICLES

1. USE OF FORM.

- Form will be provided to aircraft commander transporting cargo identified in DSAM 4145.3 (AFM 71-4/TM 38-250/NAVAIR 15-03-500/MCO P4030.19).
- Form will be provided by activity responsible for delivering dangerous cargo to aircraft for loading. A new form will be made when there is a change in dangerous cargo manifesting. New forms will be completed by activity making change and considering all aircraft cargo.

2. CARGO IDENTIFICATION. (DDT Classes A & B Explosives and Class A Poisons, with their military classes.)

- DOT Class Explosive B
- Military (DoD Class)
- Net Explosives Weight (Net) lbs. 600 lbs.

3. NORMAL TOWER REPORTING PROCEDURES. Prior to takeoff or landing, aircraft commander will advise airdrome control of cargo identification in Section 2.

4. EMERGENCY TOWER REPORTING PROCEDURES. Aircraft commander will advise airdrome control of cargo by DDT Class. For DDT Classes A & B Explosives, Net Explosives Weight will also be provided. Information in items a, b or c below will also be provided at airfields where nonmilitary firefighting equipment may respond to aircraft emergencies. Additionally, any information considered pertinent to cargo may be provided to airdrome control. Aircraft commander's judgment is not subject to after-the-fact debate or review on disclosure of classified information.

a. FOR DOT CLASS A EXPLOSIVES

If cargo ignites, detonation may occur, and blast and fragments can be expected. Radioactive contamination or toxic vapors may also be present. Firemen and equipment should maintain minimum distance of 1200 feet and protect against fragments. Public should maintain minimum distance of 2000 feet.*

b. FOR DDT CLASS B EXPLOSIVES

Cargo burns with intense heat. Light fragments can be expected. Public should maintain distance of 500 feet.*

c. FOR DDT CLASS A POISONS

Cargo contains toxic chemicals. Personnel should not approach aircraft if cargo burns or containers rupture. Fragments and intense heat can also be expected. Lethal vapors can extend 2 miles downwind and 1 mile in other directions.

*Unless a more exact distance based upon the quantity-distance criteria for the military class is available.

5. DD FORM 1387-2. Copy of each DD Form 1387-2 will be attached to this form. Location of cargo by pallet (or compartment) will be annotated on form under remarks by the loadmaster. Location of cargo on pallet will be provided by activity delivering pallets to aircraft for loading.

6. CHECKLIST

	ND	YES
a. Passengers prohibited.		X
b. Deviation authority exercised for concurrent movement of "single dagger" cargo and passengers.	X	
c. Smoking prohibited (cargo compartment).		X
d. FAA exemption for civil aircraft used.	X	
e. Cargo damaged/deteriorated. (If yes, see explanation on DD Form 1387-2.)	X	
f. Interim or one-time clearance granted for movement of cargo. (If yes, explain in Remarks or attach copy.)	X	

7. REMARKS

SAMPLE

8. SIGNATURE

a. Individual issuing form will sign and attach copy of each DD Form 1387-2. Aircraft commander will read these instructions, attach DD Form(s) 1387-2, and retain his copies with aircraft cargo manifest.

b. Signature of individual issuing form, organization, date. *W.W. Owens, AFD, Anniston, Alabama, 2 May 72*

c. Signature of aircraft commander, organization, aircraft number/mission, date. *TC W. J. Reano, 145th MAW, #15475, 2 May 72*

9. DISTRIBUTION. Original to aircraft commander for retention with cargo manifest. Copy retained by issuing organization.

DD FORM 836-1

REPLACES EDITION OF 1 JUN 66, WHICH IS OBSOLETE.

Figure G-5. DD Form 836-1, Briefing for aircraft commanders transporting explosives or other dangerous articles.

DOC IDENT		RI FROM		STOCK OR PART NUMBER		FSC		F I I N		ADDY L		UNIT D		QUANTITY		DOCUMENT NUMBER		REQUISITION		DATE		SERIAL		SUPPLEMENTARY ADDRESS		SIGNAL		PUNO		DISTR		PROJ		RED D		DEL DATE		ADV		RI		UNIT PRICE		DOLLARS		CTS																																	
A5A		BA4K		13259305866		F497		PT		00152		AT8684		0005		5609X		Y		AT87JR		B54		20		091														66576 00																																							
SHIPPED FROM										SHIP TO										MARK FOR										PROJECT										TOTAL PRICE																																							
ANNISTON ARMY DEPOT										RGE CAM RANH BAN CL/BN VIETNAM																														DOLLARS										CTS																													
ANNISTON ALABAMA A31RNR										AT87JR USAAD CRB																																																																					
										CAM RANH BAY VIETNAM																																																																					
WAREHOUSE LOCATION										UNIT WEIGHT										UNIT CUBE										UFC										N HFC										FREIGHT RATE										DOCUMENT										CITY									
										6005																																																																					
SUBSTITUTE DATA (ITEM ORIGINALLY REQUESTED)										FREIGHT CLASSIFICATION NOMENCLATURE																																																																					
T										U										V																																																											
										CLUSTER CANISTER TACTICAL																																																																					
										SPECIAL PERMIT NO 4865																																																																					
										TEAR GAS GRENADE CLASS C (GRENADE TEAR PRODUCING)										car no; SOU 43584																																																											
SELECTED BY AND DATE										TYPE OF CONTAINER										TOTAL WEIGHT										RECEIVED BY AND DATE										INSPECTED BY AND DATE																																							
										PT										14480										NEW 1900 LBS										SEAL: SORY 8710753-54																																							
PACKED BY AND DATE										NO OF CONTAINERS										TOTAL CUBE										WAREHOUSED BY AND DATE										WAREHOUSE LOCATION																																							
										39										.1100										SOU SCL																																																	
REMARKS																																																																															
																				LAO 90148 AIN4																																																											
																				SD 040										VESSEL AS 90																																																	
AA										BB										CC										EGT NO:										QTY										EE																													
FIRST DESTINATION ADDRESS										DATE SHIPPED										CME-1-38										38										10 PTS 3630 LBS 282 CU																																							
																				CME-1-48										6										2 PTS 590 LBS 56 CU																																							
																				CME-1-37										108										27 PTS 10260 LBS 762 CU																																							
13 TRANSPORTATION CHARGEABLE TO										14 B/LADING AWB OR RECEIVER'S SIGNATURE AND DATE										15 RECEIVER'S DOCUMENT NUMBER																																																											
										AT8684 0005 5609XXX																																																																					

DD FORM 1348-1A

1 JAN 64

DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

1

DEPARTMENT OF THE ARMY

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS

RGE

TO: CAM RANH BAN CL/BN VIETNAM
AT87JR USAAD CRB
CAM RANH BAY VIETNAM

LN4 MILITARY OCEAN TERMINAL SUNNYPOINT
SOUTHPORT NORTH CAROLINA

DOC NO

37 PT @ 41 PER PT
2 PT @ 21 PER PT

Figure G-6. DD Form 1348-1A, Single line item release/receipt document.

TRANSPORTATION CONTROL NUMBER AT8684 0005 5542 XXX		RDD 091	PROJECT
FROM:		TRANS PRIORITY	
TO: (POE when applicable) 1 N4 TO Military Ocean Terminal, Sunny Point Leland, N.C.		4	
POD (When applicable) RG4 QUI NHON VIETNAM			
ULTIMATE CONSIGNEE OR MARK FOR AT87JQ USAAD QNH QUI NHON VIETNAM		SAMPLE	
PIECE NUMBER 1	TOTAL PIECES 1		

DD FORM 1387, 1 APR 66 EDITION OF 1 APR 63 WILL BE USED. MILITARY SHIPMENT LABEL

Figure G-8. DD Form 1387, Military shipment label.

EDITION OF 1 APR 66 MAY BE USED. DD FORM 1387-1 1 MAR 70 MILITARY SHIPPING TAG	TRANSPORTATION CONTROL NUMBER BLAFOP 0007 9284		RDD	PROJECT	TRANS PRIORITY YYY
	FROM: A31FVU ANNISTON ARMY DEPOT ANNISTON, ALABAMA		091		4
	TO: (POE when applicable) IN4 TRANSPORTATION OFFICER MILITARY OCEAN TERMINAL, SUNNY POINT LELAND, N.C.				
	POD (When applicable) IG1 BANGKOK THAILAND				PIECE NUMBER
	ULTIMATE CONSIGNEE OR MARK FOR BLAFOP USAID ORD MF: REDCAP				TOTAL PIECES
					WEIGHT THIS PIECE 797
				CUBE THIS PIECE 6.63	

SAMPLE

Figure G-9. DD Form 1387-1, Military shipping tag.

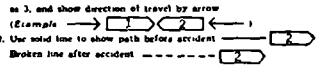
SPECIAL HANDLING DATA/CERTIFICATION			
TRANSPORTATION CONTROL NUMBER EK4703 9351 3004 XXX		NOMENCLATURE OF ITEM SPECIAL FIREWORKS	
DESTINATION ANDERSEN AFB AGANA GUAM		CLASS B EXPLOSIVE EXPLOSIVE LABELS	
HANDLING INSTRUCTIONS PROPERTIES: MODERATE EXPLOSIVE HAZARD STORAGE AND HANDLING: HANDLE CAREFULLY - KEEP FIRE AWAY SAMPLE LS GROUP: 3		NET EXPLOSIVE WEIGHT 5.5 LBS/BX 148.5 LBS/PT	
		GROSS WEIGHT 66.9 LBS/BX 1906 LBS/PT	
		SHIPPER CERTIFICATION: This is to CERTIFY that the contents of the packages in this shipment are properly described by name and are packed, marked, and in proper condition for transportation in accordance with: ☒ SUBPARAGRAPH 5-33b(1)(b)1-4, TM 38-250, NAVWEPS 15-03-500 AND MCO P4030.19 ☐ OFFICIAL AIR TRANSPORT RESTRICTED ARTICLES TARIFF 6, CAB NO. 62 ☐ OTHER (Specify) ☐ SHIPMENT WITHIN PASSENGER/CARGO AIRCRAFT LIMITATIONS	
DD FORM 1387-2, 1 APR 66		REPLACES EDITION OF 1 APR 63, WHICH MAY BE USED.	
		SIGNATURE K. V. FORBUS AMMO SUP OFC, GS-12 ANNISTON ARMY DEPOT, ANNISTON, ALA	
		DATE	

Figure G-10. DD Form 1387-2, Special handling/data certification.

PERSONS INJURED		NAMES		HOME ADDRESSES	
		Mike McCoy		7007 W. East St Hot Coffee, Miss	
OCCUPANTS IN YOUR VEHICLE		SP-5 Autrey, Jean		NCOA	
		Pvt Gonzales, Jacob		NCOA	
OCCUPANTS IN OTHER VEHICLE		Mike McCoy		7007 W. East St Hot Coffee, Miss	
WITNESSES AND POLICE		SAMPLE			
POLICE OFFICER		Sgt Danner, To		BADGE NO. 007	
YOUR VEHICLE		PRECINCT OR HQS.		MP	
DIRECTION OF TRAVEL		DIRECTION OF TRAVEL		DIRECTION OF TRAVEL	
North		North		North	
SIDE OF STREET OR HIGHWAY		SIDE OF STREET OR HIGHWAY		SIDE OF STREET OR HIGHWAY	
Right		Right		Right	
APPROXIMATE SPEED (Miles per hour)		APPROXIMATE SPEED (Miles per hour)		APPROXIMATE SPEED (Miles per hour)	
15 mph		35 mph		35 mph	
CONDITION OF ROADWAY (Wet, dry, icy, etc.)		CONDITION OF ROADWAY (Wet, dry, icy, etc.)		CONDITION OF ROADWAY (Wet, dry, icy, etc.)	
Wet		Wet		Wet	
WEATHER (Clear, foggy, rain, snow, etc.)		TYPE OF ROADWAY (Concrete, macadam, etc.)		TYPE OF ROADWAY (Concrete, macadam, etc.)	
Foggy		Macadam		Macadam	
OTHER INFORMATION (Indicate stop signs, traffic lights, obstructions, etc.)					

IF MEDICAL AID RENDERED, STATE BY WHOM		WHERE WAS INJURED TAKEN	
Dr. Lead zone		South County Hospital	
CONDITION OF OTHER DRIVER		Rose bleed	
IF OTHER DRIVER OR PERSONS INJURED MADE STATEMENTS AS TO CAUSE OF ACCIDENT AND EXTENT OF PERSONAL OR PROPERTY DAMAGE, RELATE CONVERSATION AND NAMES AND ADDRESSES OF OTHERS HEARING SUCH STATEMENTS			
Mc Coy said he did not see vehicle in time.			
Pvt Gonzales heard this.			
MAKE		TYPE	
Henry - J		Sedan	
OPERATOR'S STATE PERMIT NUMBER		VEHICLE LICENSE NUMBER	
400000		34E-1213	
OPERATED BY		OWNED BY	
Mike McCoy		Mike McCoy	
ADDRESS (Home)		OWNER'S ADDRESS (Business)	
7007 W. East St Miss		Home	
PARTS OF VEHICLE DAMAGED (Describe)			
Bumper and left fender dented			
OTHER PROPERTY DAMAGED (Describe)			
None			

XII. INDICATE BY DIAGRAM BELOW WHAT HAPPENED:

- Number Federal vehicle as 1—other vehicle as 2—additional vehicle as 3, and show direction of travel by arrow.
(Example: )
- Use solid line to show path before accident.
Broken line after accident.
- Show pedestrian by 
- Show railroad by 
- Give names or numbers of streets or highways.
- Indicate north by arrow in this circle 

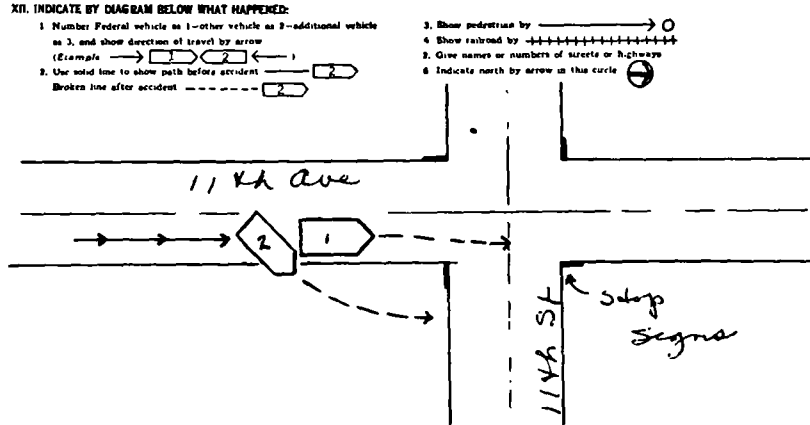


Figure G-11. Standard Form 91, Operator's report of motor vehicle accident.

TELL IN YOUR OWN WAY HOW ACCIDENT HAPPENED

THIS FORM TO BE FILLED OUT BY THE GOVERNMENT OPERATOR AT THE TIME AND AT THE SCENE OF THE ACCIDENT, INsofar AS POSSIBLE.

OPERATOR'S REPORT OF MOTOR-VEHICLE ACCIDENT

DEPARTMENT OR AGENCY

Army

NAME AND LOCATION OF ORGANIZATION AT WHICH YOU ARE ASSIGNED

NCOA Ft Powder Fla

I was coming to a stop at the intersection of 11th Avenue and 11th Street when the Henry Jay behind me could not stop in time and swerved to the right, sweeping my right rear bumper

OPERATOR	PLEASE PRINT FULL NAME (Last, First, Middle Initial)	AGE	RANK, RATING, OR TITLE
	<i>FRANK, FELIX F</i>	<i>28</i>	<i>SP4</i>
	SERVICE NUMBER OR SOCIAL SECURITY NUMBER	OPERATOR'S GOV PERMIT NUMBER	
	<i>429-10-1360</i>	<i>541-96</i>	
	HOME ADDRESS (Street, city, State, ZIP Code)	TELEPHONE (Home)	
	<i>NCOA Banacks</i>	<i>3160</i>	

DATE AND DAY OF WEEK OF ACCIDENT	TIME	HOURS ON DUTY PRIOR TO ACCIDENT
<i>13 March 1971</i>	<i>11:00 AM</i>	<i>3</i>

PLACE OF ACCIDENT (If accident in city, give city, street and number, and State; if outside city limits, indicate mileage to nearest city or other landmark)

Intersection Ft. Powder, Fla 11th and 11th ave

FROM WHAT PLACE TO WHAT PLACE WERE YOU BOUND

From Range #6 to Bldg 427

FOR WHAT PURPOSE

Return from field (hauling rations)

MAKE	TYPE	REGISTRATION NUMBER OR OTHER IDENTIFICATION
<i>1960 GMC</i>	<i>2 1/2-ton</i>	<i>1A9530</i>

PARTS OF VEHICLE DAMAGED (Describe)
<i>Right rear bumper damaged (Est \$30.00)</i>

IF THIS IS A BACKING ACCIDENT, WAS GUIDE AVAILABLE? ☐ YES ☐ NO
IF AVAILABLE, WAS GUIDE USED? ☐ YES ☐ NO

MAKE	TYPE	YEAR
<i>Henry-J</i>	<i>Sedan</i>	<i>1958</i>

OPERATOR'S STATE PERMIT NUMBER	VEHICLE LICENSE NUMBER, AND STATE
<i>400 000</i>	<i>34 E-1218 Miss</i>

OPERATED BY (Name)	VEHICLE OWNED BY
<i>M Coy, Mike</i>	<i>M Coy, Mike</i>

OPERATOR'S HOME ADDRESS (Street, city, State)	OWNER'S ADDRESS (Street, city, State)
<i>7007 W. East St Hot Coffee</i>	<i>Same</i>

PARTS OF VEHICLE DAMAGED (Describe)

Left front fender and bumper dented

OTHER VEHICLE OR PROPERTY DAMAGED (Describe)

WAS VEHICLE EQUIPPED WITH SEAT BELT? ☒ YES ☐ NO

IF YES, WERE THEY IN USE AT TIME OF ACCIDENT? ☒ YES ☐ NO

SIGNATURE OF OPERATOR
Felix F. Frank

DATE
16 March 1971

HAVE YOU ANSWERED ALL QUESTIONS AS COMPLETELY AS POSSIBLE?

U.S. GOVERNMENT PRINTING OFFICE 1966-O-255-148 #40-G

Standard Form 91
Revised April 1963

(91-106)

BUREAU OF THE BUDGET
Circular A-5 (Rev.)

Figure G-11-Continued.

FM 3-20

Carbon paper NOT required to complete this form

STANDARD FORM 361 OCTOBER 1967 GENERAL SERVICES ADMINISTRATION FPMR (41CFR) 101-40 702		DISCREPANCY IN SHIPMENT REPORT (Short Title "DISREP")		1 DATE 15 Mar 71	2 FILE REFERENCE A45ECY-0001-S						
3. TO-*		4. REPORTING ACTIVITY* CONSIGNEE									
5. CONSIGNEE (Name, address or activity address code, and ZIP code) TRANSPORTATION OFFICER AKPHO-DSV-TF FORT HOOD, TEXAS 76544		6. CONSIGNOR (Name, address and ZIP code) TRANSPORTATION OFFICER ANNISTON ARMY DEPOT ANNISTON, ALABAMA 36201									
7. DISCREPANCY NOTED AT (When different from Item 4)		8. SHIPPER IF OTHER THAN CONSIGNOR (Name, address and ZIP code)									
9. POINT OF ORIGIN Bynum, Alabama	10. DESTINATION Fort Hood, Texas 2	11. DESTINATION CARRIER Central Freight Lines, Inc.	12. METHOD OF SHIPMENT ☐ TL ☒ LTL ☐ CL ☐ LCL ☐ OTHER (Specify)								
13. BILL OF LADING a TYPE ☒ GOVERNMENT ☐ COMMERCIAL ☐ OCEAN b NO 1485960		14. DATE CARRIER SIGNED FOR SHIPMENT 24 Nov 70	15. TRANSPORTATION CONTROL NO. (TCN)								
16. WAYBILL NO.	17. FREIGHT BILL OR PRO NO. 49697870	18. RECEIPT OF SHIPMENT BY CONSIGNEE a DATE 5 Dec 70 b TYPE OF DOCUMENT c NO									
19. FILE REFERENCE OF OTHER OVERAGES AND SHORTAGES IN SAME VEHICLE OR SHIPMENT NONE		20a. ACQUISITION DOCUMENT ☒ REQUISITION ☐ PURCHASE ORDER ☐ CONTRACT ☐ INVOICE ☐ OTHER (Specify)		20b. NO A4540091880011							
21. TRANSPORTATION DATA											
COMMODITY DESCRIPTION AND FEDERAL STOCK NO. (If any) a	b DATA AS SHOWN ON ☐ GBL ☐ INVOICE ☐ OTHER (Specify)										
	KIND OF PK'GS c	MARKS AND NUMBERS ON PACKAGES d	NUMBER OF PACKAGES			WEIGHT					
			SHIPPED e	RECEIVED f	OVER g	SHORT h	DAMAGED i	SHIPPED j	RECEIVED k		
Tear Gas Grenade	CR		39	38	0	1	0	1950 lb	1900 lb		
SAMPLE											
22. CARRIER DATA											
a DATE CARRIER NOTIFIED 5 Dec		b. PERSON CONTACTED (Name) Rex Holbart			c LADING INSPECTED ☒ BY CARRIER ☒ BY IO OR AGENT ☐ INSPECTION WAIVED						
d. IDENTIFICATION NO (Car, truck, vessel or other conveyance)			e EQUIPMENT IN GOOD CONDITION ☒ YES ☐ NO (Explain in Item 27)			f APPROPRIATE CONVEYANCE FOR COMMODITY ☒ YES ☐ NO (Explain in Item 27)					
23. SUPPLY DATA											
NOMENCLATURE AND FEDERAL STOCK NO. (If any) a	UNIT OF ISSUE b	QUANTITY		OVER, SHORT, DAMAGE (Code O/S/D in Col. "e")				DISPOSITION i			
		☐ BILLED SHIPPED c	RECEIVED d	O/S/D CODE e	QUANTITY f	UNIT COST g	TOTAL COST h				
1325 930 5866 F497	CR	39	38	5	1 cr	12.79	319.75				
(25 items)											
24. DISCREPANCY DATA											
a DATE DISCREPANCY DISCOVERED 5 Dec 70		b TYPE OF DISCREPANCY (Check and complete)									
		OVER ☐ CONCEALED ☐ VIS- IBILE		SHORT ☐ CONCEALED ☒ VIS- IBILE		LOSS ☐ CONCEALED ☐ VIS- IBILE		ASTRAY OTHER (Specify)		DAMAGE ☐ CONCEALED ☐ VIS- IBILE	
b (1) AMOUNT		\$		XXXX		XXXX		XXXX		\$	
b (2) REPLACEMENT COST		XXXX		\$ 319.75		\$		\$		\$	
b (3) IF REPAIRABLE (Cost)		XXXX		XXXX		XXXX		XXXX		\$	
b (4) IF NOT REPAIRABLE **		XXXX		XXXX		XXXX		XXXX		\$	

Figure G-12. Standard Form 361, Discrepancy in shipment report.

Fold under along this line after completing entire form

25. LOADING AND UNLOADING DATA									
a SEAL CONDITION ☐ ORIGINAL INTACT ☐ BROKEN, MISSING OR NOT ORIGINAL (Explain) NA									
b SHIPMENT UNLOADED ☐ ON TEAM TRACK ☒ DIRECT INTO WAREHOUSE OR STORAGE ☐ OTHER (Specify)			c DATE AND TIME UNLOADING (1) BEGAN 5 Dec 70 (2) COMPLETED 5 Dec 70			d. WAS UNLOADING CONTINUOUS ☒ YES ☐ NO (Explain here type of protection afforded) Normal installation security			
e LOCATION OF PROPERTY IN CARRIER'S EQUIPMENT (Not applicable to less than load shipments. Furnish sketch when needed for clarity) ☐ IN END ☐ ON FLOOR ☐ AT DOOR POST ☐ IN DOORWAY AREA ☐ ON TOP OF LOAD ☐ ALONG SIDEWALLS ☐ AT BULKHEAD ☐ ON FLOOR RACKS ☐ OTHER (Specify)									
f WAS LOAD PROPERLY BULKHEADED, BRACED AND/OR TARPED ☐ YES ☐ NO (Explain in Item 27)					g WAS LOAD SHIFTED OR JUMBED ☐ YES (Explain in Item 27) ☐ NO		h PRESENT LOCATION OF PROPERTY		
26. DISPOSITION DATA									
a. REJECTED TO CARRIER ☐ YES ☒ NO		b SALVAGE ☐ SOLD ☐ REQUEST THAT ADVISE AS TO DISPOSITION BE ENTERED IN ITEM 30c		c DAMAGE ☐ TO BE REPAIRED BY ☐ REQUEST THAT ADVISE AS TO WHO WILL MAKE REPAIRS BE ENTERED IN ITEM 30c			d REPAIRED AT GOV'T EXPENSE ☐ YES ☐ NO		
e EXCEPTION NOTED ON YES NO f ADDITIONAL INFORMATION YES NO									
(1) GOVERNMENT BILL OF LADING					(1) PHOTO ATTACHED				
(2) OTHER (Specify) Carrier's freight bill XX					(2) CARRIER'S INSPECTION REPORT ATTACHED X				
27 REMARKS - DESCRIBE LOSS OR DAMAGE OR REPORT OTHER DISCREPANCIES AS APPROPRIATE. FACTUAL INFORMATION ONLY WILL BE ENTERED. (Continue on separate sheet of paper if necessary.) Request tracer action. Routing Central MOTOR EXPRESS and Central Freight Lines Distribution: 1 cy to shipper 1 cy to stock control 1 cy to delivering carrier 1 cy to DOT, Office of Haz Mat 1 cy for ITO files									
28. RESPONSIBILITY ☐ CARRIER ☐ SHIPPER/CONTRACTOR ☐ OTHER (Specify) EXHIBIT "A" THRU "C"									
29 PREPARED BY (Signature) LTC TC ITO					a TITLE OF PERSON PREPARING (Name)		b DATE 15 Mar 71		
30. FOR USE BY CONSIGNOR									
a TO * Transportation Officer Fort Hood, Texas					b FROM * T. O. Anniston, Alabama				
c REMARKS OR DISPOSITION INSTRUCTIONS AS APPLICABLE (Will include transportation fund citation when applicable) ☐ SHIPPED AS BILLED (Search has been made of shipping records, warehouse, loading and shipping areas to locate lost items.) ☐ NOT SHIPPED AS BILLED (Copy of "Government Bill of Lading Correction Notice" attached.)									
d SIGNATURE					e. TITLE			f DATE	
31. ACTION BY REVIEWING OFFICIALS									
a THE ABOVE ITEMS HAVE BEEN ☐ EXPENDED ☐ RECEIVED			b INVENTORY ACCOUNT			c CHARGE/TRANSFER TO			
d. ACCOUNTING CLASSIFICATION					32. ACTION BY FINANCE CENTER				
e. APPROVAL (Signature, title, and date)									

* If mailing address, include "ZIP code"

** Salvage value

☆ U. S. GOVERNMENT PRINTING OFFICE 1967 O - 283-927

361-102

Figure G-12—Continued.

Standard Form No. 1103
5 GAO 3000
1103-208-01

U.S. GOVERNMENT BILL OF LADING

ORIGINAL

B/L NO. F-4,684,200

TRANSPORTATION COMPANY		TRAFFIC CONTROL NO.	
TENDERED TO STOP THIS CAR OR TRUCK AT		Name of Carrier	
FOR CAR INITIALS AND NO.		Release Number	
TRUCK NO.		KIND	
IMPORTANT When the original of this bill of lading is surrendered to the initial carrier a memorandum copy thereof so certified must be forwarded to the consignee immediately.		CAR-TRUCK LGTH., FT., INS. † ORDERED FURNISHED MARKED CAPACITY † ORDERED FURNISHED DATE FURNISHED † DATE B/L ISSUED date issue	
RECEIVED BY THE TRANSPORTATION COMPANY NAMED ABOVE, SUBJECT TO CONDITIONS NAMED ON THE REVERSE OF THE ORIGINAL BILL OF LADING, THE PROPERTY HEREINAFTER DESCRIBED, IN ALPHABETIC GOOD ORDER AND CONDITION (CONTENTS AND VALUE UNKNOWN), TO BE FORWARDED TO DESTINATION BY THE SAID COMPANY AND CONNECTING LINES, THERE TO BE DELIVERED IN LIKE GOOD ORDER AND CONDITION TO SAID CONSIGNEE. CONSIGNEE (NAME AND MAILING ADDRESS)		FROM (SHIPPING POINT) Bynum, Alabama FULL NAME OF SHIPPER Anniston Army Depot, Anniston, Alabama MARKS MF: EXPORT (ONLY WHEN TO AERIAL PORT OR SEAPORT) 1 of ____ pages (When more than 1 page) CHARGES TO BE PAID TO DEPARTMENT OR ESTABLISHMENT, BUREAU OR SERVICE (AND LOCATION) FINANCE CENTER, TDIV U.S. ARMY INDIANAPOLIS, INDIANA 46249 APPROPRIATION CHARGEABLE CONTRACTORS WILL RETURN UNUSED OR CANCELED BILLS OF LADING TO GOVERNMENT OFFICE FROM WHICH RECEIVED	
DESTINATION Where going Priority-desired delivery date VIA (NOTE SHIPMENT ONLY WHEN SOME SUBSTANTIAL INTEREST OF THE GOVERNMENT IS SERVED THEREBY) (When Specified)		SEAL NOS NONE (on LTL) NUMBER WHEN TL OR CL SHIPPER SL&C (TL OR CL) APPLIED BY FOR CARRIER'S USE ONLY WAYBILL NO. FREIGHT BILL NO.	
PACKAGES NO. KIND DESCRIPTION OF ARTICLES (USE CARRIER'S CLASSIFICATION OR TARIFF DESCRIPTION IF POSSIBLE, OTHERWISE A CLEAR MONTECHNICAL DESCRIPTION) TCN: _____ TP _____ CU: _____ FOR: _____ PORT _____ PROJ: _____ FSN: _____ NOUN: _____ NMFC: or UFC (if by Rail) Freight Classification Dangerous-Explosive or Applicable Placards Applied DIM: Air Freight Only IF THIS SHIPMENT FULLY LOADS THE CAR OR TRUCK USED, CHECK ☐ YES		NUMBERS ON PACKAGES WEIGHTS* AGREED (Southern Railway or REA only) TARIFF OR SPECIAL RATE AUTHORITIES (C/L - T/L OR VOL. ONLY)	
CARRIER FURNISHED ☒ PICK UP- ☐ TRAP CAR- ☐ SERVICE AT ORIGIN. INITIALS OF SHIPPER'S AGENT wgr or Priority Air) NAME OF TRANSPORTATION COMPANY Name of Carrier (same as on top) DATE OF RECEIPT OF SHIPMENT INITIAL CARRIER'S AGENT BY SIGNATURE BELOW, CERTIFIES HE RECEIVED THE ORIGINAL BILL OF LADING. ☐ YES (INDICATE BY CHECK) PER Signature of Agent		CERTIFICATE OF ISSUING OFFICER I CERTIFY THAT THIS SHIPMENT IS MADE PURSUANT TO THE TERMS OF CONTRACT OR PURCHASE ORDER NO. SEE ABOVE DATED _____ OR OTHER AUTHORITY FOR SHIPMENT, F.O.B. POINT NAMED IN CONTRACT _____ ISSUING OFFICE Anniston Army Depot, Anniston, Alabama SIGNATURE OF ISSUING OFFICER _____ DATE /// TITLE W.W. OWENS, TO, TA FOR TO shipped	

CARRIER FURNISHED ☐ DELIVERY- ☐ TRAP CAR- ☐

SERVICE AT DESTINATION.

Figure G-13. Standard Form 1103, US Government bill of lading.

APPENDIX H

FORMAT FOR NEWS RELEASE FOR ACCIDENTS INVOLVING CBR MATERIAL

(Release applicable portions only)

THE FOLLOWING NEWS RELEASE IS UNCLASSIFIED.

The (railroad, truck, maritime, or aircraft) accident which occurred at _____ o'clock today (or day of week) at (near) (name of town or route number, and direction and distance from town) may have resulted in the escape of hazardous material which was being transported for the United States Army. Trained US Army technical escort personnel (were accompanying the shipment and are currently rendering) (have been dispatched from (location) to render) the shipment harmless. Routine precautions have been taken to insure that local citizens are not unnecessarily exposed.

(Military and/or police) guards have been stationed to prevent entry into the area of possible danger. (Evacuation of this area was necessary for the welfare of the community, because of the wind and weather conditions which could cause spread of the dangerous material.) There is no danger, however, outside the guarded area. (The public is urged to remain outside the area bounded on the north by _____, on the east by _____, on the south by _____, and on the west by _____). Sightseers will hamper the work of the cleanup crew and may get into the possible danger area. A public announcement will be made when the hazardous material has been removed or rendered harmless by the expert technicians.

Following is a list of names and addresses of military personnel who were killed or injured in the accident (release only if authorized by *Commanding Officer, Technical Escort Unit*).

Name, Grade, and Age	Address	Casualty Status	Other Available Data
----------------------	---------	-----------------	----------------------

NOTICE TO PRESS

The information contained herein is that which the escorting officer is authorized to release. As further information develops, it will be made available from the Office of the Chief of Information, Department of the _____, Washington, D.C.



APPENDIX I

ACCIDENT/INCIDENT CHECKLIST

CLASSIFICATION

I-1. Accident/Incident Site

- a. *Exact Location (Distance and Direction)*
_____ from _____ (town)
on _____ (road, rail)
- b. *Accident/Incident Occurred* _____ (hr)
_____ (date)
- c. *Vehicles Involved (Size, Type, Owner, Extent of Damage)*

- d. *Agent Involved (Quantity, Container Size and Type)* _____

- e. *Casualties or Injuries—(Name, Rank, Organization if Military; Name, Company if Civilian; Type of Injury)* _____

- f. *Name of On-Scene Commander* _____
- g. *Area Secured.*
(1) Distances and direction _____
(2) Security maintained by _____
_____ (Hwy Patrol, PD, Military, Civilians)
- h. *Weather Conditions.*
(1) Precipitation _____ (amount and type)
(2) Wind _____ knots from _____
(direction) _____ (steady, gusty)
(3) Temperature at time of accident/incident _____
(4) Forecasted weather _____
- i. *Terrain Features* _____

j. *Are the Following Available; if so, From Where?* _____

- (1) Water _____
- (2) Decontaminants _____
- (3) Medical services _____
- (4) Communications between site and base

- (5) Photographic services _____
- (6) Airfield (location and distance) _____

- (7) Transportation from airfield to site _____

- (8) Helicopter landing area at site (location and how marked) _____

I-2. Notification

- a. *Notified Parent Unit* _____ hr
_____ date
- b. *Notified Consignor* _____ hr
_____ date
_____ date
- c. *Notified Consignee* _____ hr
- d. *Notified Local Authorities* _____ hr
_____ date _____ Title
- e. *Notified Army Area Hq* _____ hr
_____ date
- f. *Notified Following Additional Activities as per Unit SOP* _____

CLASSIFICATION

CLASSIFICATION

g. Assistance Requested from Following Activities _____

I-3. Initial Reconnaissance

a. Established Hot Line _____ hr at _____ location

b. Prepared Map (Diagram of Area) and Plotted All Information _____ yes _____ no

c. Photographs Taken _____ yes _____ no

d. Decontamination Personnel Dressed Out at _____ hr _____
 _____ (type clothing)

e. Decontamination Personnel Entered Area at _____ hr with _____
 _____ (equipment and detectors)

f. Determined Extent of Contamination and Plotted on Map (Diagram) _____ yes _____ no

g. Actual Conditions at Site.

(1) Number of containers involved _____

(2) Approximate amount of agent lost _____

(3) Samples taken _____ yes _____ no

h. Decontamination Station Established at Hot Line at _____ hr

i. Decontamination Started at _____ hr

j. Type and Quantity of Decontaminant Used

k. Area Released to CBAICO _____
 hr _____ date _____
 _____ (name, rank, organization)

l. Released by CBAICO _____ hr _____ date

m. Departed Area _____ hr _____ date

n. Resumed Unit Activities

o. If Chemical Nerve Agents Involved, Was Cholinesterase Level Taken?

yes _____ no _____ date _____ hospital

I-4. Recommendations and Comments

CLASSIFICATION

APPENDIX J

DECONTAMINANTS

Decontaminants	Agent effective against—	Mixing procedure	Contact time	Remarks
Decontaminating solution No. 2 (DS-2).	All known toxic chemical agents and biological materials (except bacterial spores) if sufficient contact time is allowed.	No mixing required; issued in ready-to-use solution.	Allow to remain in contact with contaminated surface for approximately 30 min for VX or 8-10 min for mustard and G agents.	1. Can be used at temperatures from -25° F. to 125° F. 2. Considered a general-purpose decontaminant; will cause a green to black color change upon contact with ABC-M8 detector paper, a red color change with M6A1 detector paper, and a blue color change with M7A1 detector crayon. 3. Used with the ABC-M11 1½-qt portable decontaminating apparatus. 4. Ignites spontaneously on contact with STB and HTH. 5. Not to be used aboard ships.
Supertropical bleach (STB).	Mustard, lewisite, V and G agents, and biological agents.	<i>Dry mix:</i> 2 shovels bleach to 3 shovels earth or inert material (e.g. ash). <i>Slurry mix:</i> 50 lb bleach to 6 gal. water for a paste.	Allow to remain in contact with contaminated surface for at least 30 min, then wash off with clear water.	1. Pure bleach will spontaneously ignite on contact with liquid mustard agent. 2. Gives off toxic vapors on contact with G agent. 3. Ignites spontaneously on contact with DS-2. 4. Not recommended for ship use. Top deck storage only—not to be used in slurry or dry form—4-6% by wt. solution only.
Sodium hydroxide in alcohol-water solution.	BZ, lewisite, G agents, and all biological materials.	Mix 10 lb caustic w/12 gal. water and 12 gal. alcohol (ethyl, methyl, or isopropyl).	Dissolve agent in solution and allow to stand 24 hr.	1. Dissolve sodium hydroxide in water, then allow solution to cool. 2. Add alcohol to caustic solution. 3. Not recommended for ship use. Top

Decontaminants	Agent effective against—	Mixing procedure	Contact time	Remarks
Sodium hydroxide (caustic soda).	G agents, lewisite, and all biological materials including bacterial spores.	1. Mix a water solution of 10 lb to 12 gal. water (10 percent solution). 2. 10 percent solution for biological decontamination.	1. Neutralize G agents on contact. 2. Allow to remain in contact with contaminated surface for approximately 15 min. 3. Allow 30 min contact time for biological materials.	deck storage only. The use of the solution in holds of cargo vessels not recommended at all. Approved for small area decontamination only. 1. Mix in an iron or steel container (never aluminum). 2. Add sodium hydroxide to water to prevent boiling and spattering due to excessive heat emitted. 3. Possible source: Military supply, commercial laundry, drug store. 4. Not recommended for ship use. Top deck storage only—not recommended for hold or large area decon on vessels.
Sodium hypochlorite solution (household bleach).	Blister, V, and all biological materials.	1. No mixing required 2. For biological decontamination dilute 2 parts bleach to 10 parts water.	1. Reacts rapidly (within 5 min) with blister and V agents. 2. Allow 10–15 min contact time for biological materials.	1. Use full strength solution. 2. Possible source: Commercial laundry (solution 10–14 percent) or food store, e.g., Purex, Clorox, and so forth (5 percent solution). 3. Preferred decontaminant for ship use. To be used for V, HD and bio-materials. Recommended 5:1 concentrations throughout. Limited storage problem.
Sodium carbonate (washing soda).	G agent	Mix 10 lb washing soda to 12 gal. water (10 percent solution).	Reacts rapidly with G agents, normally within 5 min.	Preferred decontaminant for ship use. To be used for G materials. Recommended 5% by wt. concentrations. No storage problems.
Calcium hypochlorite (HTH or HTB).	Mustard, lewisite, V agents, and all biological materials including bacterial spores.	1. Mix 5 lb bleach to 6 gal. water (10 percent solution). 2. For biological decontamination mix 1 lb bleach to 6 gal. water (2 percent solution).	1. Reacts rapidly (within 5 min) with mustard and lewisite. 2. Allow 15 min contact time for biological materials.	1. Faster acting decontaminant than STB. Can be used as a dry mix or a slurry. <i>Not recommended for ship use.</i> Top deck storage. Not allowed in

Decontaminants	Agent effective against—	Mixing procedure	Contact time	Remarks
Betapropiolactone (BPL) standard A biological decontaminant.	All microorganisms, to include bacterial spores.	No mixing required. Issued in ready-to-use solutions. One gallon will cover 16,000 cubic feet.	Allow 2-hr contact time, then aerate 24 hr.	slurry or dry form in hold of vessels. 2. Possible source: Commercial laundry or drug store. 1. Recommended for interior use; can be used outside as a liquid decontaminant. Not to be used on ships—normal 2% bleach recommended. 2. Optimum conditions for spraying are 75° F., R.H. 70 percent or higher. 3. BPL is a vesicant requiring the use of protective clothing. 4. Should be stored below 40° F. 5. Interiors need not be airtight.
Formalin (formaldehyde).	All microorganisms, to include bacterial spores.	No mixing required. One qt for every 1,000 cubic feet.	Allow 16-hr contact time, then aerate at least 24 hr.	1. Recommended as interior decontaminant for relatively closed areas. 2. Optimum conditions for spraying are 70–80° F., R.H. 85 percent. 3. Will curl and discolor paper. Will leave white residue.
Ethylene oxide (ETO).	All microorganisms, to include bacterial spores.	No mixing required. 30 lb for every 1,000 cubic feet.	1. Allow 6-hr contact time. 2. Contact time must be doubled for each 20° F. drop in temperature below 75° F.	1. ETO is flammable. Not recommended for interior use. (See carboxide.) 2. Airtight inclosure required. 3. Will blister skin. 4. No aeration required except items worn next to skin must be aerated 18–24 hr.
Carboxide (ETO and CO ₂).	All microorganisms, to include bacterial spores.	No mixing required. 30 lb for every 1,000 cubic feet.	1. Allow 12 hr. contact time. 2. Contact time must be doubled for each 20° F. drop in temperature below 75° F.	1. Carboxide is non-flammable and is recommended for interior use. 2. Airtight inclosure required. 3. Will blister skin. 4. No aeration required except items worn next to skin must be aerated 18–24 hr.
PAA (peracetic acid).	All microorganisms, to include bacterial spores.	Available as 40 percent solution. Mix 1 qt PAA to 3½ gal. of	Allow 10 minutes contact time.	1. 40 percent solution has low flash point (105° F.); 3 per-

Decontaminants	Agent effective against—	Mixing procedure	Contact time	Remarks
		water. (Add PAA to water.)		cent solution non-flammable. 2. Will cause burns and blister skin. 3. Must be stored under refrigeration to prevent decomposition. 4. Used as liquid phase decontaminant. 5. Protective clothing is required.
Hyamine (benzethonium chloride).	All vegetable microorganisms.	1. 0.1–1 percent solution. 2. 1 lb hyamine for every 12 gal. of water yields 1 percent solution.	Allow 5–30 min contact time.	1. Estimated fatal dose to man 1–3 grams. 2. Care should be taken when mixing to avoid inhalation of powder. 3. Available in 1 lb bottles from Rohm & Haas, Philadelphia, Pa. NOT TO BE USED ON SHIPS—normal 2% bleach recommended.

APPENDIX K

NEUTRALIZATION OF CORROSIVE MATERIALS

K-1

Any spill of a corrosive material must be neutralized as soon as possible. It is imperative that a spill aboard an aircraft be handled immediately since it has the potential of rendering the aircraft unsafe for further flight.

K-2

The following table provides essential data required to neutralize spilled corrosive materials. The neutralizing agent (column 2) must be shown on the DD Form 1387-2.

Note. Items preceded by an asterisk (*) are mild corrosive chemicals, are soluble in water, and normally will only require flushing with large amounts of water. These items are assigned a neutralizing agent for use when complete neutralization is desired due to local operating conditions. Where a specific procedure is required for satisfactory neutralization, the method is indicated in parentheses "(1)" in the "Neutralizing agent" column and is outlined at the end of the table.

Corrosive material	Neutralizing agent
*Acetic acid	20 percent sodium bicarbonate
Acetyl benzoyl peroxide solution.	Water only
Acetyl chlorine	20 percent sodium bicarbonate
Acetyl peroxide	(1)
Acetylene tetrachloride (see tetrachloroethane).	(3)
Acid materials not otherwise specified, liquid.	20 percent sodium bicarbonate
Alkaline corrosive battery fluid.	5 percent acetic acid
Alkaline materials not otherwise specified, liquid.	20 percent sodium bicarbonate
Allyl chloroformate	20 percent sodium bicarbonate
Allyl trichlorosilane	20 percent sodium bicarbonate
Aluminum chloride, anhydrous.	(3)
*Aluminum nitrate	20 percent sodium bicarbonate
Ammonium hydroxide	5 percent acetic acid
*Ammonium nitrate	20 percent sodium bicarbonate
*Ammonium nitrate-carbonate mixture.	20 percent sodium bicarbonate
*Ammonium nitrate (organic coating).	20 percent sodium bicarbonate

Corrosive material	Neutralizing agent
*Ammonium nitrate fertilizer.	20 percent sodium bicarbonate
*Ammonium nitrate mixed fertilizer.	20 percent sodium bicarbonate
*Ammonium nitrate phosphate.	20 percent sodium bicarbonate
*Ammonium perchlorate	20 percent sodium bicarbonate
Ammonium permanganate.	Water only
Amyl trichlorosilane	20 percent sodium bicarbonate
Antisoil chloride	20 percent sodium bicarbonate
Antimony pentachloride	20 percent sodium bicarbonate
Antimony pentafluoride	20 percent sodium bicarbonate
Antimony trichloride	20 percent sodium bicarbonate
*Barium chlorate	(4)
*Barium nitrate	(4)
*Barium perchlorate	(4)
*Barium permanganate	(4)
Barium peroxide	(1)
Battery fluid, acid	20 percent sodium bicarbonate
Battery fluid, alkaline	5 percent acetic acid
Benzoyl peroxide	(2)
Benzoyl bromide (bromotoluene, alpha).	(3)
Benzyl chloride	(3)
Boron trichloride	20 percent sodium bicarbonate
Bromine	Solution of 9 lb sodium thisulphate and 4 oz sodium carbonate in 10 qt water.
Bromine pentafluoride	20 percent sodium bicarbonate
Bromine trifluoride	20 percent sodium bicarbonate
Bromotoluene, alpha (see benzyl bromide).	
Butyl trichlorosilane	20 percent sodium bicarbonate
*Calcium chlorate	(4)
*Calcium chlorite	(4)
*Calcium hypochlorite, dry	(5)
Calcium nitrate	Water only
Calcium peroxide	(1)
*Calcium permanganate	(4)
Caprylyl peroxide	(1)
Carbolic acid (phenol)	20 percent sodium bicarbonate
Caustic potash (see potassium hydroxide).	20 percent sodium bicarbonate
Caustic soda (see sodium hydroxide).	
Chemical kits (use neutralizer listed for corrosive component kit).	
Chloroacetyl chloride	20 percent sodium bicarbonate

Corrosive material	Neutralizing agent
Chlorate and borate mixtures.	(4)
*Chlorate and magnesium chloride mixtures.	(4)
Chlorate of potash (see potassium chlorate).	
Chlorate of soda (see sodium chlorate).	
Chlorinated lime	Water
Chlorine trifluoride	20 percent sodium bicarbonate
Chlorobenzoyl peroxide (para).	(2)
Chloronaphthalene	(3)
Chlorosulphonic acid (sulphur trioxide mixture).	20 percent sodium bicarbonate
Chromic acid (chromium trioxide).	20 percent sodium bicarbonate
Chromyl chloride	20 percent sodium bicarbonate
*Cobalt nitrate (hexahydrate cobaltous nitrate) OXY. M. NOS.	20 percent sodium bicarbonate
Cresylic acid, cresol	(3)
Cumene hydroperoxide	(1)
Cupriethylene-diamine solution.	5 percent acetic acid
Cyclohexyltrichlorosilane	20 percent sodium bicarbonate
Dane solution (see tetrachloroethane).	
Dicumyl peroxide	(1)
Diethyl dichlorosilane	(1)
Difluorophosphoric acid, anhydrous.	20 percent sodium bicarbonate
Difliso octyl acid phosphate.	20 percent sodium bicarbonate
Dimethyldichlorosilane	20 percent sodium bicarbonate
Dimethylhexane dihydroperoxide.	(2)
Dimethyl hydrogen phosphate, DMHP.	20 percent sodium bicarbonate
Dimethyl sulfate	20 percent sodium bicarbonate
Diphenyldichlorosilane	20 percent sodium bicarbonate
Dodecyltrichlorosilane	20 percent sodium bicarbonate
Electrolyte battery, acid	20 percent sodium bicarbonate
Electrolyte battery, alkaline.	5 percent acetic acid
Ethyl chloroformate	20 percent sodium bicarbonate
Ethyldichlorosilane	20 percent sodium bicarbonate
Ethylene imine	5 percent acetic acid
Ethyl phenyl dichlorosilane.	20 percent sodium bicarbonate
Ethyl trichlorosilane	20 percent sodium bicarbonate
*Ferric nitrate nonahydrate OXY. M. NOS.	20 percent sodium bicarbonate
*Ferric nitrate solution OXY. M. NOS.	20 percent sodium bicarbonate
Flame retardant compounds:	
Containing acid ingredients.	20 percent sodium bicarbonate

Corrosive material	Neutralizing agent
Containing alkaline ingredients.	5 percent acetic acid
Fluosulphonic acid	20 percent sodium bicarbonate
Formic acid	20 percent sodium bicarbonate
Guanidine nitrate	Water only
Hexadecyltrichlorosilane	20 percent sodium bicarbonate
Hexafluorophosphoric acid.	20 percent sodium bicarbonate
Hexamethylene diamine solution.	5 percent acetic acid
Hexyltrichlorosilane	20 percent sodium bicarbonate
Hydriodic acid	20 percent sodium bicarbonate
Hydrobromic acid	20 percent sodium bicarbonate
Hydrochloric acid (muriatic acid).	20 percent sodium bicarbonate
Hydrofluoric acid	20 percent sodium bicarbonate
Hydrofluosilicic acid	20 percent sodium bicarbonate
Hydrogen peroxide solution in water, containing over 8 percent hydrogen peroxide, by weight.	Water only
*Hypochlorite solutions containing more than 7 percent available chlorine by weight.	(5)
Iodine monochloride	20 percent sodium bicarbonate
Isopropyl percarbonate, stabilized.	20 percent sodium bicarbonate
Lactic acid	Water only
*Lanthanum nitrate OXY. M. NOS.	20 percent sodium bicarbonate
Lauroyl peroxide	(2)
*Lead nitrate	20 percent sodium bicarbonate
*Lithium hypochlorite, containing more than 39 percent available chlorine.	(5)
Magnesium nitrate	Water only
*Magnesium perchlorate	(4)
Magnesium peroxide, solid.	(3)
Mercury, metallic	(6)
Methyl chloroformate	20 percent sodium bicarbonate
Methylchloromethyl ether.	(1)
Methyl dichlorosilane	20 percent sodium bicarbonate
Methyl trichlorosilane	20 percent sodium bicarbonate
Mixed acids	20 percent sodium bicarbonate
Monochloroacetic acid	20 percent sodium bicarbonate
Monofluorophosphoric acid.	20 percent sodium bicarbonate
Muriatic acid (see hydrochloric acid).	
Nitrates not otherwise specified.	20 percent sodium bicarbonate
Nitrating (mixed) acid	20 percent sodium bicarbonate
Nitric acid	20 percent sodium bicarbonate
Nitro carbo nitrate	(3)

Corrosive material	Neutralizing agent
Nitrohydrochloric acid	20 percent sodium bicarbonate
Nonyl trichlorosilane	20 percent sodium bicarbonate
Octadecyltrichlorosilane	20 percent sodium bicarbonate
Octyl trichlorosilane	20 percent sodium bicarbonate
*Paramenthane hydroperoxide.	20 percent sodium bicarbonate
Peracetic acid	20 percent sodium bicarbonate
Perchloric acid, not in excess of 72 percent.	20 percent sodium bicarbonate
Permanganate of potash (see potassium permanganate).	
Permanganate of soda (see sodium permanganate).	
*Permanganates not otherwise specified.	(4)
Phenol (see carbolic acid).	
Phenyl trichlorosilane	20 percent sodium bicarbonate
Phosphoric acid, ortho	20 percent sodium bicarbonate
Phosphorus tribromide	20 percent sodium bicarbonate
Phosphorus trichloride	20 percent sodium bicarbonate
*Potassium bromate	(4)
*Potassium chlorate	(4)
Potassium hydroxide	5 percent acetic acid
Potassium nitrate	Water only
Potassium nitrate mixed with sodium nitrate.	Water only
Potassium nitrite	Water only
*Potassium perchlorate	(4)
*Potassium permanganate.	(4)
Potassium peroxide	Water only
*Potassium persulphate OXY. M. NOS.	25 percent ferrous sulphate solution ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$).
Propyl trichlorosilane	20 percent sodium bicarbonate
Pyrosulfuryl chloride	20 percent sodium bicarbonate
Saltpeter (see potassium nitrate).	
Silicon tetrachloride (silicon chloride).	20 percent sodium bicarbonate
*Silver nitrate	20 percent sodium bicarbonate
Sodium aluminate, liquid	5 percent acetic acid
*Sodium bromate	(4)
*Sodium chlorate	(4)
*Sodium chlorite	(4)
Sodium hydroxide	5 percent acetic acid
Sodium methylate	(1)
Sodium nitrate	Water only
Sodium nitrite	Water only
*Sodium permanganate	(4)
*Sodium peroxide	5 percent acetic acid
*Strontium chlorate	(4)
*Strontium nitrate	Water only
Strontium peroxide	(1)
Succinic acid peroxide	Water only
Sulfur chloride	20 percent sodium bicarbonate
Sulfur trioxide solution	20 percent sodium bicarbonate
Sulfur trioxide stabilized	20 percent sodium bicarbonate
Sulfuric acid	20 percent sodium bicarbonate
Sulfuryl chloride	20 percent sodium bicarbonate

Corrosive material	Neutralizing agent
Tertiary butylisopropyl benzene hydroperoxide.	(1)
Tetrachloroethane (acetylene tetrachloride).	(3)
Tetranitromethane	(1)
Thionyl chloride	20 percent sodium bicarbonate
Thiophosphoryl chloride	20 percent sodium bicarbonate
Tin tetrachloride	20 percent sodium bicarbonate
Titanium tetrachloride	20 percent sodium bicarbonate
Trichlorosilane	Allow to evaporate
Trimethylchlorosilane	20 percent sodium bicarbonate
*Uranyl nitrate	20 percent sodium bicarbonate
Urea peroxide	Water only
Vinyl trichlorosilane	20 percent sodium bicarbonate
Water treatment compound, acid.	20 percent sodium bicarbonate
Water treatment compound, alkaline.	5 percent acetic acid
Zinc ammonium nitrate	Water only
*Zinc chlorate	(4)
*Zinc permanganate	(4)
Zinc peroxide	(1)

Notes.

(1) a. Remove absorbed material using a hard-bristled brush. (Where absorbent material was not specified, proceed to step b.)

b. Apply alcohol to surfaces to dissolve the spilled chemical.

c. Remove the alcohol by absorbing with sand or diatomaceous earth or by flushing into sewage system when authorized.

d. Rinse with water and dry all surfaces.

e. Inaccessible areas will be opened, absorbent material applied, and neutralization completed in accordance with steps a through d, as applicable.

f. Dispose of absorbed material and neutralized wastes as directed.

(2) a. Remove absorbent material using a hard-bristled brush. (Where absorbent material was not specified, proceed to step b.)

b. Apply an alcohol-tetrachloroethylene solution (81 percent by volume alcohol and 19 percent by volume tetrachloroethylene) to dissolve the spilled chemical.

c. Remove the alcohol-tetrachloroethylene solution by absorbing with sand or diatomaceous earth or by flushing into sewage system when authorized.

d. Rinse with water and dry all surfaces.

e. Inaccessible areas will be opened, absorbent material applied, and neutralization completed in accordance with steps a through d, as applicable.

f. Dispose of absorbent material and neutralized wastes as directed.

(3) a. Remove absorbed material using a hard-bristled brush. (Where absorbent material was not specified, proceed to step b.)

b. Apply alcohol to surfaces to dissolve the spilled chemical.

c. Remove alcohol by absorbing with sand or diatomaceous earth or by flushing into sewage system when authorized.

d. Treat area with 20 percent sodium bicarbonate mixture, continuing additions at 1-minute intervals until no bubbling occurs on application.

e. Let bicarbonate remain on surfaces for 5 minutes.

f. Rinse with water and dry all accessible surfaces.

g. Inaccessible areas will be opened, absorbent material applied, and neutralization completed in accordance with steps a through f, as applicable.

h. Dispose of absorbed material and neutralized wastes as directed.

(4) a. Remove absorbed material using a hard-bristled brush. (Where absorbent material was not required, proceed to step b.)

b. Rinse area with water.

c. Apply a solution of acidic ferrous sulphate (10 g ferrous sulphate and 2-ml sulfuric acid per 100 ml water). Let remain on surface for 5 minutes.

d. Remove with absorbent material or flush into sewage system with water when authorized.

e. Treat area with 20 percent sodium bicarbonate mixture, continuing additions at 1-minute intervals until no bubbling occurs on application. Let remain on surface for 5 minutes.

f. Remove neutralized wastes with mop or by flushing into sewage system when authorized.

g. Rinse with water and dry all surfaces.

h. Inaccessible areas will be opened, absorbent material applied, and neutralization completed in accordance with steps a through g, as applicable.

i. Dispose of absorbent material and neutralized wastes as directed.

(5) a. Remove absorbed material using a hard-bristled brush. (Where absorbent material was not specified, proceed to step b.)

b. Apply an aqueous solution containing 1 percent iodine and 5 percent potassium iodide. Let remain on surface for 5 minutes.

c. Remove wastes by absorbing sand or diatomaceous earth or by flushing into sewage system when authorized.

d. Apply 5 percent sodium thiosulphate solution. Let remain on surfaces for 5 minutes.

e. Remove with cloth mop or by flushing into sewage system when authorized.

f. Rinse area with water and dry all surfaces.

g. Inaccessible areas will be opened, absorbent material applied, and neutralization completed in accordance with steps a through f, as applicable.

h. Dispose of absorbed and neutralized wastes as directed.

(6) a. Recover spilled mercury using a mercury sweeper (available from chemical supply houses) or a water-wetted paint brush and pan. Place recovered mercury in an airtight steel or airtight suitable cushioned glass container.

b. Unrecoverable mercury will be decontaminated with sulfur or calcium polysulfide.

c. Cleanup or decontamination personnel will use standard individual protective masks or breathing apparatus. During the cleanup operation in poorly ventilated areas, the self-contained breathing apparatus will be used.

APPENDIX L

DETERMINATION OF DOWNWIND TOXIC VAPOR HAZARD

L-1. General

This appendix contains information on the uses of the ABC-M2 point source downwind toxic vapor hazard calculator (FSN 665-893-0986). A description of the calculator, definitions of terms used with the calculator, typical calculations, and illustrations of the adjusted hazard area are included.

L-2. Uses

a. The ABC-M2 point source vapor hazard calculator is designed for use by safety personnel concerned with the storage, shipment, handling, and disposal of munitions containing chemical agents. The ABC-M2 calculator provides rapid determination of the distance downwind that a toxic vapor cloud of a given dosage may be expected to exist when a toxic chemical agent is released from a point source. The determination can be made either when the release is instantaneous, as when a munition detonates, or when the release is continuous, as when a container leaks.

b. When using the calculator, all weights, distances, and rates of speed must be converted to the metric system. Conversion factors to convert to the metric system are on the back of the M2 calculator.

L-3. Explanation of Terms

For the purposes of this appendix, the following definitions apply.

a. *Downwind Toxic Vapor Hazard Distance*—the distance downwind from a point source release (or a line source release) that a toxic chemical cloud of a given dosage may be expected to exist.

b. *Dosage*—the concentration of a toxic vapor in the air multiplied by the time (minutes) that the concentration exists or the time that an individual is exposed to a given concentration of toxic vapor. Dosage is expressed in milligram-minutes per cubic meter (mg-min/m³).

Note. Since dosage is dependent upon concentration and time, the same dosage can be obtained by a short exposure to a high concentration or by a long exposure to a low concentration.

c. *Concentration*—the amount of toxic vapor contained in a unit volume of air. Concentration is expressed in milligrams per cubic meter (mg/m³).

d. *Source Strength*—the weight of a toxic chemical agent that has been released as a vapor. Source strength is expressed in kilograms (kg) for an instantaneous point source. Source strength is expressed in kilograms per minute (kg/min) for a continuous point source.

e. *Wind Speed*—the speed of the wind at the time of release of the source. Wind speed is expressed in meters per minute (m/min).

f. *Vertical Temperature Gradient*—the change in temperature with altitudes.

g. *Cloud Width*—the width of the toxic vapor cloud at a given downwind toxic vapor hazard distance. Cloud width is expressed in meters (M).

h. *Point Source*—the actual point where the agent is released.

L-4. ABC-M2 Point Source Downwind Toxic Vapor Hazard Calculator

a. *Description.* The ABC-M2 point source downwind toxic vapor hazard calculator is issued in a plastic protective envelope. The calculator consists of an inner disk and an outer disk with a swing scale superimposed on the two disks. The disks and the swing scale are affixed concentrically by a center rivet which permits the rotation of the inner disk and the swing scale over the stationary outer disk (fig L-1).

(1) *Inner disk.* The inner disk is made of laminated white plastic. A dosage (D) scale is imprinted in red on the outer edge of the disk. A cloud width scale in meters and two sets of vertical temperature gradient curves are imprinted in black on the inner surface of the disk.

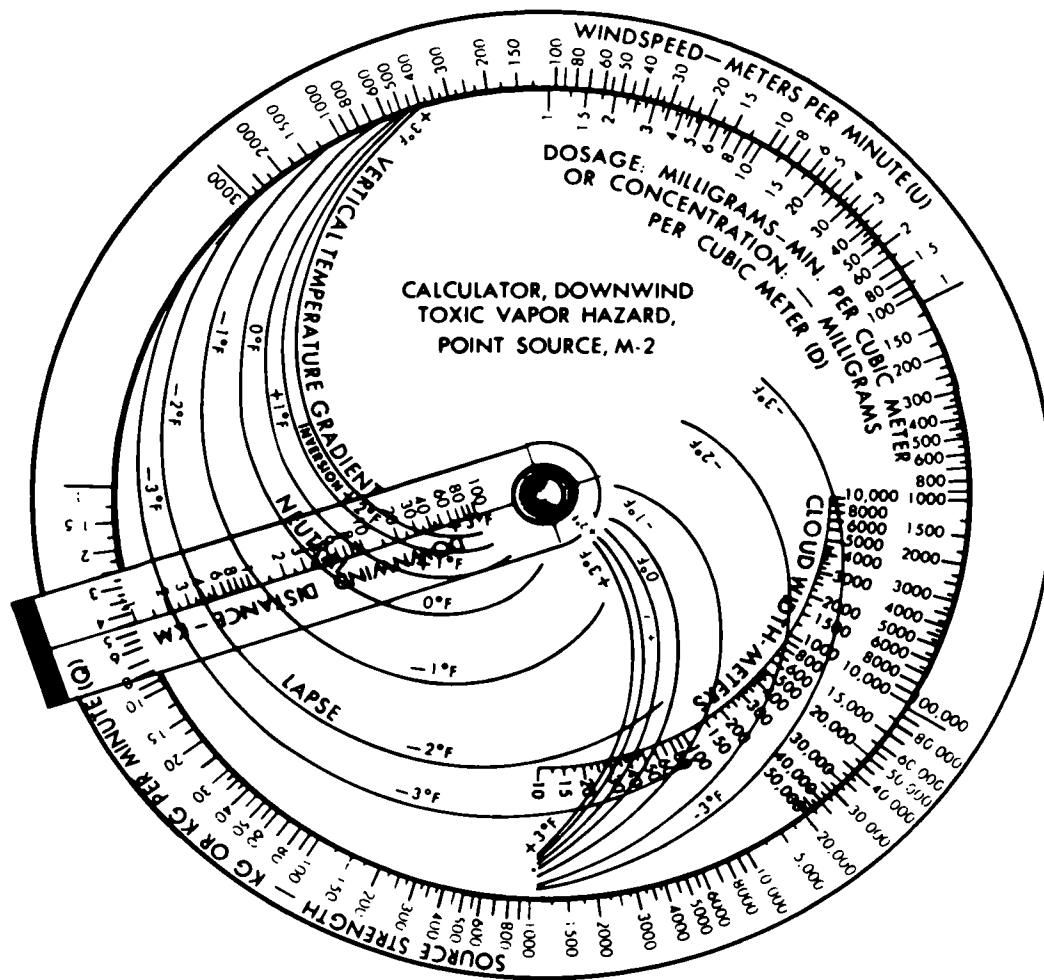


Figure L-1. Determining downwind toxic vapor hazard distance (instantaneous point source), ABC-M2 calculator.

(2) *Outer disk.* The outer disk is made of laminated white plastic. A wind speed (U) scale is imprinted in red, and a source strength (Q) scale is imprinted in black on the edge of the outer disk. Brief instructions on the use of the calculator and a list of conversion factors are imprinted in black on the back of the calculator.

(3) *Swing scale.* The swing scale is made of transparent plastic and is imprinted in black with a downwind distance-kilometer scale.

b. Limitations. The ABC-M2 point source downwind toxic vapor hazard calculator was initially designed for use with toxic chemical agents capable of being vaporized. For the purpose of reacting to chemical emergencies, the M2 calculator is used for all those agents listed in appendix M. Four values must be known before the M2 calculator can be used. These values are dosage, wind speed, source strength, and vertical temperature gradient.

c. Instantaneous Point Source Calculations.

(1) *Problem 1.* Ten pounds of toxic chemical agent are released at a given point. At what distance downwind can a toxic vapor cloud having a dosage of 2 mg-min/m³ be expected to exist and how wide will the toxic cloud be at that distance?

The following meteorological conditions were found to exist:

(a) Wind speed = 2 miles per hour (53.6 meters per minute).

(b) Temperature gradient = 0° F.

(2) Solution to Problem 1.

Step 1. Aline the dosage (2 mg-min/m³) on scale D with the wind speed (53.6 meters per minute) on scale U. Hold this setting (3, fig L-1).

Step 2. Swing the swing scale so that the base line of the swing scale aligns with 10 pounds (4.5 kg) on scale Q. Hold this setting (1, fig L-1).

Step 3. Read the distance on the swing scale at the point where the 0° F. temperature gradient curve intersects the base line of the swing scale. This is the downwind toxic vapor hazard distance, which is approximately 4.5 kilometers (2, fig L-1).

Step 4. Swing the swing scale over the cloud width-meters scale so that 4.5 kilometers (toxic vapor hazard distance, step 3) on the swing scale intersects the 0° F. temperature gradient curve in that area (1, fig L-2). Hold this setting and read the cloud width where the base line on the swing scale aligns with the cloud width-meters scale. This is the cloud width at 4.5 kilometers downwind, which is approximately 150 meters (2, fig L-2).

(3) *Problem 2.* A toxic chemical agent is to be released at a given point. What amount of toxic agent can be released in order that a dosage of not more than 2 mg-min/m³ will be received at

a downwind distance of 5 kilometers from the point of release?

The following meteorological conditions were found to exist:

(a) Wind speed = 10 miles per hour (268 meters per minute).

(b) Temperature gradient = $+3^{\circ}$ F.

(4) *Solution to Problem 2.*

Step 1. Aline the dosage (2 mg-min/m³) on scale D with the wind speed (268 meters per minute) on scale U. Hold this setting.

Step 2. Swing the swing scale so that 5 kilometers on the base line of the swing scale intersects the $+3^{\circ}$ F. temperature gradient curve. Hold this setting.

Caution: Do not use the temperature gradient curve in the cloud width-meters area.

Step 3. Read the source strength where the base line of the swing scale intersects scale Q.

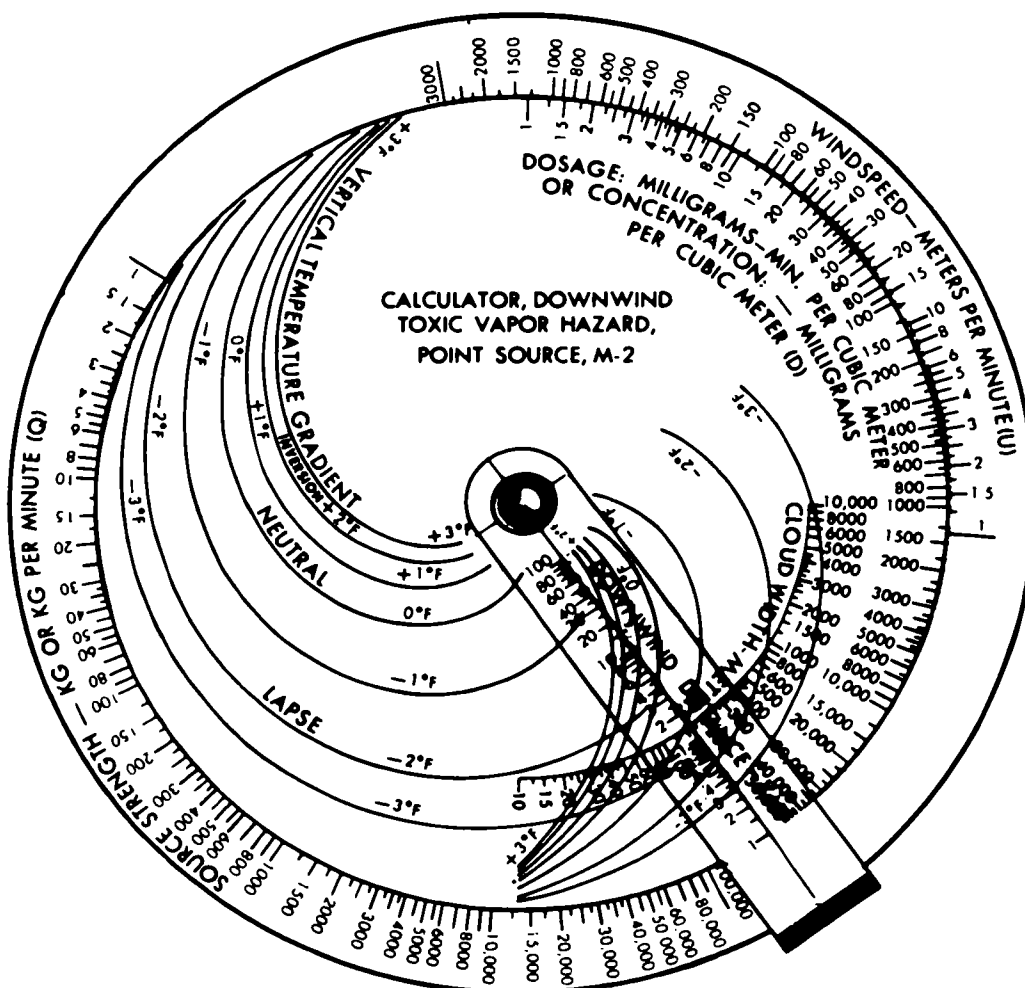


Figure L-2. Determining cloud width at downwind distance (instantaneous point source), ABC-M2 calculator.

This is the amount of toxic chemical agent that will produce a dosage of 2 mg-min/m³ at a downwind distance of 5 kilometers, which is 2 kilograms.

d. Continuous Point Source Calculations. Steps in continuous point source calculations are the same as steps for instantaneous point source calculations. Source strength is expressed in kilograms per minute (kg/min) rather than in kilograms.

(1) *Problem.* A toxic chemical agent is released at a rate of 2 kilograms per minute from a given point. What distance downwind can a toxic cloud having a dosage of 25 mg-min/m³ be expected to exist and how wide will the cloud be at that distance?

The following meteorological conditions were found to exist:

(a) Wind speed = 12 miles per hour (322 meters per minute).

(b) Temperature gradient = +2° F.

(2) *Solution.*

Step 1. Aline the dosage (25 mg-min/m³) on scale D with the wind speed (322 meters per minute) on scale U. Hold this setting.

Step 2. Swing the swing scale so that the base line of the swing scale alines with 2 kilograms per minute on scale Q. Hold this setting.

Step 3. Read the distance on the swing scale at the point where the +2° F. temperature gradient curve intersects the base line of the swing scale. This is the downwind toxic vapor hazard distance, which is approximately 0.4 kilometer.

Step 4. Swing the swing scale over into the cloud width-meters scale so that 0.4 kilometer (approximately) on the swing scale intersects the +2° F. temperature gradient curve in that area. Hold this setting and read the cloud width where the base line of the swing scale alines with the cloud width-meters scale. This is the cloud width at approximately 0.4 kilometer downwind, which is approximately 15 meters.

L-5. Illustrations of the Adjusted Hazard Area

The initial hazard area consists of an exclusion area and a downwind distance area. This area may be adjusted after a reconnaissance of the accident/incident site. Two examples showing graphic illustrations of the adjusted hazard area are given below:

a. *Example 1.*

The radius of the exclusion area is 400 meters, the downwind distance is 2 1/2 (2.5) kilometers, and the cloud width is 1,000 meters.

(1) *Exclusion area = 400 meters radius.*

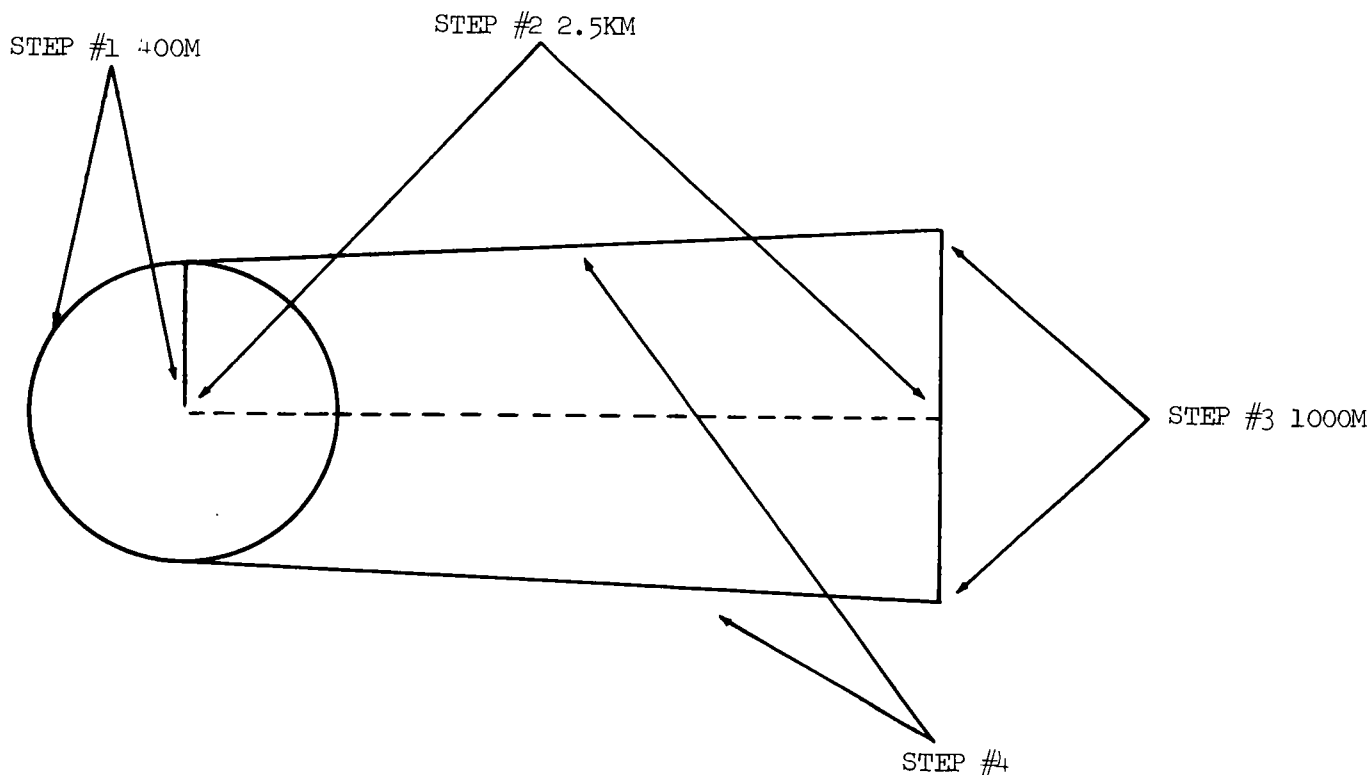


Figure L-3. Adjusted hazard area.

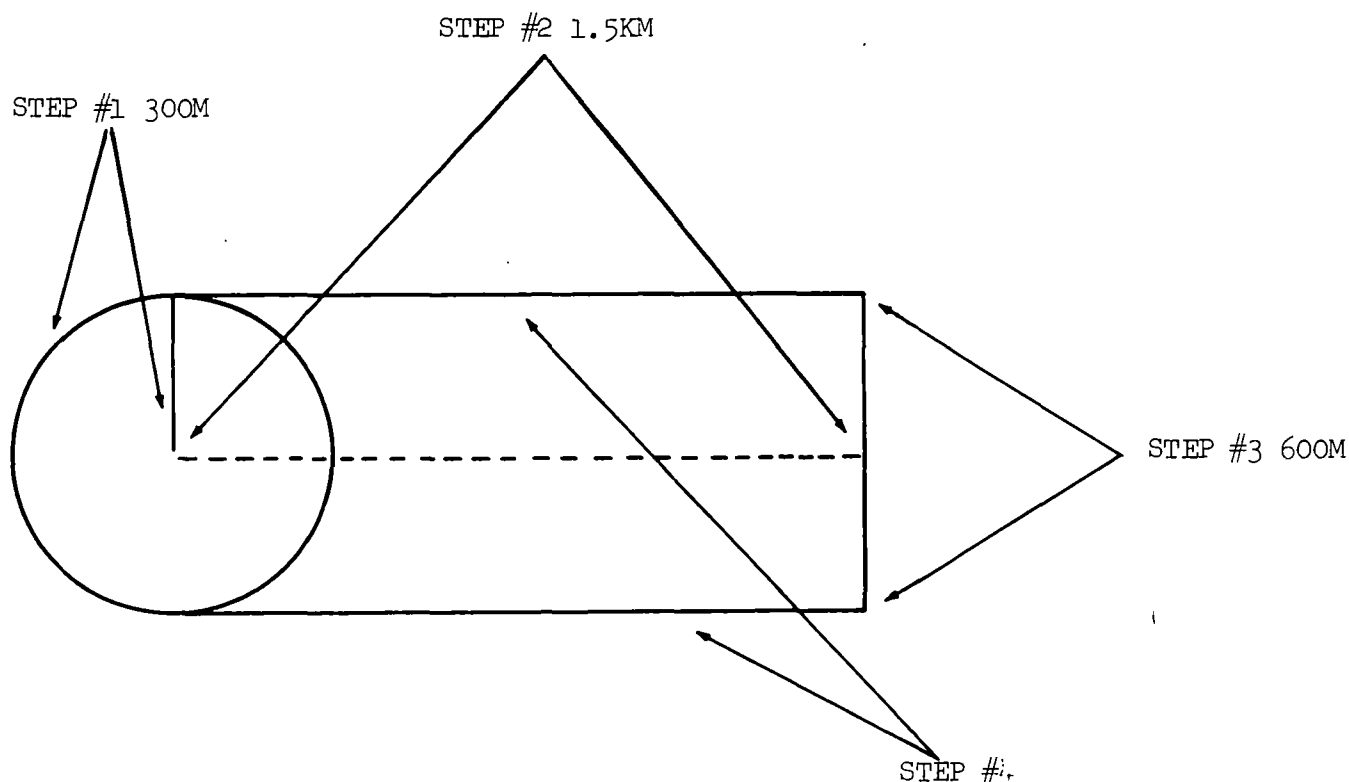


Figure L-4. Adjusted hazard area.

Step 1. Draw a circle around the incident point with a radius of 400 meters (1, fig L-3).

(2) *Downwind distance* = 2.5 kilometers.

Step 2. Draw a straight line from the incident point and extend $2\frac{1}{2}$ (2.5) kilometers in the direction of the wind (2, fig. L-3).

(3) *Cloud width* = 1,000 meters.

Step 3. Draw a straight line perpendicular to the downwind hazard line and $2\frac{1}{2}$ (2.5) kilometers from the incident point (3, fig L-3).

(4) *Boundary lines*.

Step 4. Draw two straight lines tangent to the exclusion area and extend downwind until they connect with the cloud width line (4, fig L-3).

b. Example 2.

The radius of the exclusion area is 300 meters, the downwind distance is 1.5 kilometers, and the cloud width is 500 meters.

(1) *Exclusion area* = 300 meters radius

Step 1. Draw a circle around the incident point with a radius of 300 meters (1, fig L-4).

(2) *Downwind distance* = 1.5 kilometers.

Step 2. Draw a straight line from the incident point and extend 1.5 kilometers in the direction of the wind (2, fig L-4).

(3) *Cloud width* = 500 meters. Since the cloud width is smaller than the diameter of the exclusion area, the cloud width is changed to read the same as the diameter of the exclusion area (600 meters).

Step 3. Draw a straight line perpendicular to the downwind distance and 1.5 kilometers from the incident point (3, fig L-4).

(4) *Boundary lines*.

Step 4. Draw two straight lines tangent to the exclusion area and extend downwind until they connect with the cloud width line (4, fig L-4).



APPENDIX M

US CHEMICAL MUNITIONS ★(STANAG 2143)

Munition	Agent type	Agent quantity	Packaging data	Hazards
1-gal chemical landmine.	HD	1 gal. (4.5 kg)	Shipped empty 10 to a box.	Agent when filled.
M23 chemical landmine.	VX	2 gal. (4.77 kg)	3 mines packed in a steel drum with styrofoam cushion. Top layer of cushion material contains fuzes and adapters.	Shipped filled with HE components installed. Leaks most likely around burster well seams.
M2A1 4.2-in. mortar cartridge.	CG, CK, HD, HT, H	6 lb (2.72 kg)	Each round packed in fiber container. Two fiber containers in wood box. Shipped with burster installed. Fuze may be installed.	High explosive and toxic agent. Leaks most likely around fuze well.
M60 105mm howitzer cartridge.	HD, HT	2.97 lb (1.35 kg)	One round per fiber container. Two fiber containers per wooden box. Shipped with burster installed. Fuze may be installed.	High explosive and toxic agent. Leaks most likely around fuze well.
M360 105mm howitzer cartridge.	GB	1.63 lb (.738 kg)	One round per fiber container. Two fiber containers per wooden box. Shipped with burster installed. Fuze may be installed.	High explosive and toxic agent. Leaks most likely around fuze well.
MK53 5-in./38 gun shell.	GB	3.3 lb (1.49 kg)	One round per fiber container. Two fiber containers per wooden box. Shipped with burster installed. Fuze may be installed.	High explosive and toxic agent. Leaks most likely around fuze well.
MK54 5-in./54 gun shell.	GB	4.2 lb (1.90 kg)	One round per fiber container. Two fiber containers per wooden box. Shipped with burster installed. Fuze may be installed.	High explosive and toxic agent. Leaks most likely around fuze well.
M104 155mm gun projectile.	HD	11.70 lb (5.30 kg)	Palletized. 8 to a pallet. Burst-ers and fuzes shipped separately.	Toxic agent only. Leaks most likely around fuze well.
M110 155mm howitzer projectile.	H, HD	9.70 lb (4.39 kg)	Palletized. 8 to a pallet. Burst-ers and fuzes shipped separately.	Toxic agent only. Leaks most likely around fuze well.
M121A1 155mm howitzer projectile.	VX	6.0 lb (2.71 kg)	Palletized. 8 to a pallet. Burst-ers and fuzes shipped separately.	Toxic agent only. Leaks most likely around fuze well.
M426 8-in. howitzer projectile.	GB	6.5 lb (2.94 kg)	Palletized. 3 to a pallet.	Toxic agent only. Leaks most likely around fuze well.
	VX	14.1 lb (6.39 kg)		
	GB	15.8 lb (7.17 kg)		

Munition	Agent type	Agent quantity	Packaging data	Hazards
MK40 warhead for 5-in. rocket.	GB	4.84 lb (2.19 kg)		
M55 115 mm rocket	VX	9.0 lb (4.07 kg)	Palletized. 15 complete rockets in shipping container on pallet. Each end open for access to sampling ports.	High explosive and toxic agent. Leaks likely anywhere due to thin wall aluminum construction.
	GB	1.0 lb (4.98 kg)		
LITTLE JOHN 318mm, M206 warhead w/52 M139 bomblets.	GB	67.6 lb (30.62 Each Bomblet, 1.3 lb (.589 kg).	Shock-mounted in hermetically sealed steel container equipped with sampling ports.	Shipped complete with filled bomblets and detonating cord. Fuze and motor shipped separately.
SERGEANT M212 missile w/330 M139 bomblets.	GB	429 lb (194.3 kg)	Shipped in 3061-lb container equipped with sampling ports. Bomblets are enclosed in warhead in plastic bag.	Shipped complete with filled bomblets and detonating cord. Fuze and motor shipped separately.
HONEST JOHN 762mm, M190 warhead w/368 M139 bomblets.	GB	480 lb (217.27 kg)	Shipped in 1725-lb container w/warhead in heat-sealed barrier bag with 5 sampling ports. Container has access doors to sampling ports.	Shipped complete with filled bomblets and detonating cord. Fuze and motor shipped separately.
M70A1 115-lb gas bomb.	HD	60 lb (27.18 kg)	Shipped with shipping bands around bomb. Burster and fuze shipped separately.	Toxic agent only. Leaks most likely around nose fuze well.
MK94 500-lb gas bomb (modification of MK82 low drag).	GB	108 lb (48.92 kg)	Shipped with shipping bands around bomb. Burster and fuze shipped separately.	Toxic agent only. Leaks most likely around nose and tail fuze wells.
MK116 Mod 0 500-lb gas bomb (weteye).	GB	352 lb (159.46 kg)	Shipped in reuseable hermetically sealed container. Sampling ports on each end of container (screwed in). Fuzes and bursters not installed.	Toxic agent only. Thin wall extruded aluminum casting.
MC-1 750-lb gas bomb.	GB	24 gal. 220 lb (99.66 kg)	Shipped two per pallet with shipping bands installed around bomb. Fuze and burster shipped separately.	Toxic agent only. Leaks most likely around nose and tail fuze wells and filling plug in baseplate.
M34A1 1000-lb gas bomb cluster w/76 M125A1 bombs.	GB	197.6 lb (89.63 kg)	Casing and nose loaded with M125A1 bombs shipped in shipping guard around each end and middle. Tail fin, fuzes, and ejection system shipped separately.	Toxic agent and explosive components in M125A1 bombs.
M43 750-lb incapacitating bomb cluster w/57 M138 bomblets.	BZ	84.4 lb (38.3 kg)	Shipped packed in shipping guard with 2 end caps and 8 wood ribs with steel bands. Fuzes and tail fin shipped separately.	Detonating cord and agent. BZ in pyrotechnic mix will automatically release in fire.
M44 175-lb incapacitating generator cluster. (3 M16 generators consisting of 42 MG canisters each.)	BZ		Shipped complete on a wood skid then enclosed in plywood.	BZ-pyrotechnic mix. Fire may cause ignition of the burning mix.

Munition	Agent type	Agent quantity	Packaging data	Hazards
SUU (suspension and release unit)	= Dispenser			
BLU (bomb live unit)	= Bomblet			
CBU (cluster bomb unit)	= Cluster and Dispenser			
BLU 19/B23	GB	4 lb (1.81 kg)	Shipped in a steel container similar to gas ID kit. 10 bomblets to container.	Agent only. Explosive shipped separately.
BLU 20/B23	BZ	1 lb (.454 kg)	Shipped in a steel container similar to gas ID kit. 10 bomblets to container.	BZ-pyrotechnic mix. Fire may cause ignition.
CBU-15A (consists of SUU 13/A and BLU 19/B23).	GB	134.8 lb (61.14 kg)	SUU 13/A shipped separately from BLU 19/B23. BLU 19 shipped as stated above.	Toxic agent only.
CBU-16A (consists of SUU 13/A, and BLU 20/B23).	BZ	40 lb (18.12 kg)	SUU 13/A shipped separately from BLU 19/B23. BLU 19 shipped as stated above.	BZ-pyrotechnic mix. Fire may cause ignition.
AERO 14B liquid spray tank.	GB, VX	90 gal. (325.80 kg).	Nose, tail, and center sections shipped separately. Center section may be full of agent.	Toxic agent only. No explosive components with this munition.
TMU-28/B liquid spray tank.	VX	160.4 gal (625 kg)	Shipped filled in CNU-77 (modified jet engine shipping container).	Toxic agent and explosive cutters. (Small charge of RDX ICC Class C explosive).



APPENDIX N
TRANSPORT GROUPS OF RADIOACTIVE NUCLIDES

(Located in back of manual)



GLOSSARY

(STANAG 2154)

Accident—The unintentional release or loss of control of chemical or biological agents or radioactive material in sufficient quantities to present a public hazard.

Escort vehicle—The conveyance designated to transport the technical escort team personnel and equipment.

Airborne radioactive materials—Any radioactive material dispersed in the air in the form of dust, fumes, mists, vapors, or gases.

Approved carrier—A carrier authorized to transport Classes A and B ammunition and explosives for the Department of Defense and the Military Traffic Management and Terminal Service.

Biological material—A microorganism which causes disease in man, plants, or animals, or causes the deterioration of materiel.

Byproduct material—Any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

Car (truck) load—The quantity of freight required for the application of car (truck) load rates; a car (truck) loaded to the carrying capacity.

Carrier—The transport agency contracted or designated to transport a specified cargo from origin to destination.

Carrier, common (commercial)—A person or company other than a common carrier who, under special and individual contracts or agreements, transports passengers or property for compensation.

CBR Alpha Team—A team of specialized Army personnel maintained at each Class I Army installation for reaction to chemical, biological, or nuclear accidents/incidents.

Chemical agent—A solid, liquid, or gas which through its chemical properties produces lethal or damaging effects on men, animals, plants, or material, or produces a screening or signaling smoke.

Compatibility—The ability of a given material to exist unchanged under certain conditions of temperature and moisture, when in the presence of some other material.

Class A poison—Gases or liquids of such a nature that a very small amount of the gas, or vapor,

of the liquid mixed with air is dangerous to life.

Class B poison—Less dangerous than Class A; substances, solid or liquid, other than Classes A or C; poisons which are known to be so toxic to man as to afford a hazard to health during transportation, or which in the absence of adequate data on human toxicity are presumed to be toxic to man because of their effects on laboratory animals.

***Class C poisons**—See *Irritating Materials*.

Consignee—The receiving agency, unit, depot, or person to whom the cargo is addressed or consigned, as indicated in the proper shipping document(s).

Consignor—The agency from which shipment is being made. This may be depot, installation, base, supply point, holding area, unit, contractor, or other agency.

Curie—(Abbreviation: military—c; civilian—ci) The unit for measuring radioactivity. One curie equals that quantity of any radioactive isotope undergoing 3.7×10^{10} disintegrations per second.

Dangerous article—Any compound, mixture, or assemblage of material as cargo which is hazardous or presents a potential danger of injury or damage, or threat to the safety of life or property in handling, storing, and/or transporting due to its explosive, combustible, flammable, corrosive, poisonous, or radioactive nature.

Decontamination—The process of making any person, object, or area safe by absorbing, destroying, neutralizing, making harmless or removing chemical or biological agents, or by removing radioactive material clinging to or around it.

Dose—The total amount of ionizing radiation received by a specified area of the body or by the whole body. (The units of measure used in military training are rad and millirad.)

Empty label—All packagings and accessories which have been used for shipment of radioactive materials when shipped as empty must be securely closed, the external surface must be free of significant removable radioactive contamination, and the radiation at the external surface of this packaging must not exceed 0.5 millirem per hour.

Etiological material—A causative agent of any of

the diseases listed in The Code of Federal Regulations, Title 42, "Public Health," or of any diseases prescribed by The Surgeon General, US Public Health Service.

**Explosives and other dangerous articles (E & ODA)*—Explosives and any hazardous materials that are regulated by the Department of Transportation (DOT) such as: Flammable liquids, solids, and gases, poisons, oxydizers, radioactive materials etc.

Fissile radioactive material—The following materials: plutonium 238, plutonium 239, plutonium 241, uranium 233, or uranium 235, or any material containing any of the foregoing materials.

Fissile radioactive material packages—These are classified according to the controls needed to provide nuclear criticality safety during transportation, as follows:

1. *Fissile Class I*—Packages which may be transported in unlimited numbers in any arrangement, and which require no nuclear criticality safety controls during transportation.
2. *Fissile Class II*—Packages which may be transported together in any arrangement but in numbers which do not exceed an aggregate transport index of 50. For purposes of nuclear criticality safety control, individual packages may have a transport index of not less than 0.1 and not more than 10. The exact number of packages that can be transported will be determined, and this number will be divided into 50 to determine the transport index for each package.
3. *Fissile Class III*—Shipments of packages which do not meet the requirements of Fissile Classes I or II and which are controlled in transportation by special arrangement between the shipper and the carrier.

Flammable—Any substance which can easily be ignited under ordinary conditions.

Incident—Any event which constitutes a hazardous situation which if not corrected could result in an accident.

Individual—Any human being.

Ionizing radiation—Electromagnetic or particulate radiation, which may cause ionization within the cells or tissues of the body. For the purpose of these regulations, alpha and beta particles, gamma rays, X-rays, and neutrons are examples of types of ionizing radiation.

**Irritating Materials*—Liquid, solid, or gas substances which upon contact with fire or when

exposed to air give off dangerous or intensely irritating fumes; do not include any Class A poisonous substances.

Label—A caution marker fixed to the outside of a package (container) of explosives and other dangerous material, giving a pictorial representation of the contents.

Large quantity radioactive materials—A quantity, the aggregate radioactivity of which exceeds that specified as follows:

Group I or II	20 curies
Group III or IV	200 curies
Group V	5,000 curies
Group VI or VII	50,000 curies
Special form material	5,000 curies

License—A license issued under the regulations in Title 10, Atomic Energy Act of 1954 as amended, Part 30, 40, or 70.

Licensee—The holder of a license described above.

**Licensed material*—Source material, special nuclear material, or byproduct material received, possessed, used, or transferred under a general or specific license issued by the Energy Research and Development Administration (ERDA) pursuant to appropriate regulations.

Less-than-car (truck) load—A quantity of freight less than that required for the application of a car- (truck-) load rate.

Low specific activity materials—Means any of the following:

1. Uranium or thorium ores and physical or chemical concentrates of these.
2. Unirradiated natural or depleted uranium or unirradiated natural thorium.
3. Tritium oxide in aqueous solutions provided the concentrations do not exceed 5 millicuries per milliliter.
4. Material in which the activity is essentially uniformly distributed and in which the estimated average concentration per gram of content does not exceed—
 - (1) 0.0001 millicurie of Group I.
 - (2) 0.005 millicurie of Group II.
 - (3) 0.3 millicurie of Group III.

Meal ticket—A Government instrument approved by the Comptroller General of the United States for use in the procurement of meals for military personnel while in a travel status.

**Minimum safe distances for radioactive shipments with personnel or undeveloped film*—

1. *Rail*—See 49 CFR, part 174 or part 175 for rail express.
2. *Motor vehicle*—See 49 CFR, part 177.

Nonflammable—Any substance which is not flammable. This substance may be capable of burning when subject to fire, but it does not support flame.

Normal form radioactive materials—Those which are not special-form radioactive materials. Normal-form radioactive materials are grouped into transport groups.

Occupational dose—Includes exposure of an individual to radiation in a restricted area and/or in the course of employment in which the individual's duties involve exposure to radiation. Occupational dose shall not be deemed to include any exposure of an individual to radiation for the purpose of medical diagnosis or medical therapy of such individual.

Occupational exposure to ionizing radiation—An exposure incurred as a result of an individual's employment or duties. Occupational exposure shall not be deemed to include the exposure of an individual to sources of ionizing radiation for the purpose of medical or dental diagnosis or therapy.

Package—The packaging plus its contents of explosives or other dangerous articles, as presented for transportation.

Packaging—The assembly of the containers and any other components necessary to assure compliance with the prescribed packaging requirement.

***Participating carriers**—Those transportation agencies and activities which are on record as participants in the latest tariff issued as the Hazardous Materials Regulations of the Department of Transportation.

Person—Any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group or Government agency, and any legal successor, representative, agent, or agency of the foregoing.

***Placards**—For radiation shipments.

1. **Rail shipment**—"Dangerous - Radioactive Material" placards as prescribed in Title 49, part 174, must be applied to cars containing packages bearing a radioactive yellow-III label as prescribed in Title 49, part 173, and to carload lots under 49 CFR, part 173. The Dangerous-Radioactive Material placard for radioactive materials must be of diamond shape, measuring 10 3/4 inches on each side, and must bear the wording in red letters as outlined in 49 CFR, part 174.

2. **Shipment made by way of common, contract, or private carriers by public highway**—Motor vehicles transporting any

quantity of radioactive materials bearing the radioactive yellow-III label shall be marked or placarded with a placard or lettering in black letters not less than four inches high on a yellow background. These placards shall be placed on all four sides of the vehicle. (Title 49, CFR, parts 173 and 177).

Port of debarkation—An authorized point of entry into a foreign country of CONUS.

Port of embarkation—An authorized point of departure from a foreign country of CONUS.

Rad—A measure of the dose of any ionizing radiation to body tissue in terms of the energy absorbed per unit mass of the tissue. One rad is the dose corresponding to the absorption of 100 ergs per gram of tissue (one millirad (mrad) = 0.001 rad).

Radiation—Any or all of the following: Alpha particles, beta particles, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles, but not sound or radio waves, or visible enforced or ultraviolet light.

Radioactive labels—Labels are required on packages of radioactive material dependent on quantity and dose rate. A large quantity of radioactive materials and fissile Class II and Class III must have a radioactive yellow-III label.

Radioactive material—Any material or combination of materials which spontaneously emit ionizing radiation. Material in which the estimated specific activity is not greater than 0.002 microcurie per gram of material, and in which the radioactivity is essentially uniformly distributed, are not considered to be radioactive materials.

Radiological protection officer—An individual designated by the commander to provide consultation and advice on the degree of hazards associated with ionizing radiation and the effectiveness of measures to control these hazards. This individual shall be technically qualified by virtue of education, military training, and/or professional experience to assure a capability commensurate with the assignment.

Red blood cell cholinesterase determination—A laboratory procedure using a chemical method for determining the red blood cell cholinesterase level.

Rem—A measure of the dose of any ionizing radiation to body tissue in terms of its estimated biological effect relative to a dose of one roentgen (r) of X-ray. Any of the following is considered to be equivalent to a dose of one

rem:

1. 1 roentgen due to X or gamma radiation.
2. 1 rad due to X or gamma radiation.
3. 0.1 rad due to neutron or high energy protons.
4. 0.05 rad due to particles heavier than protons and with sufficient energy to reach the lens of the eye.

Removable radioactive contamination—Radioactive contamination which can be readily removed in measurable quantities by wiping the contaminated surface with an absorbent material. Only significant if it exceeds applicable limits.

Restricted area—Any area, access to which is controlled by the licensee or his authorized representative, for purposes of protection of individuals from exposure to radiation and radioactive materials.

Roentgen—(Abbreviation: Military—r; civilian—R) That quantity of X or gamma radiation which will produce, as a consequence of ionization, one electrostatic unit of electricity, of either sign, in 1 cubic centimeter (0.001293 gram at STP) of dry air, as measured at 0° C. A milliroentgen is one-thousandth (10^{-3}) of a roentgen.

Routing authority—An activity responsible for designating modes and/or providing transportation routing instructions for certain shipments requiring clearance prior to movement.

Routing or route order—An order specifying the mode of transportation and the means within that mode by which shipment will move.

Source material—Uranium or thorium, or any combination thereof, in any physical or chemical form or ores which contain by weight one-twentieth of one percent (0.05 percent) or more of uranium, thorium, or any combination thereof. Source material does not include special nuclear material.

Special form radioactive materials—Those which, if released from a package, might present some direct radiation hazard but would present little hazard due to radiotoxicity and little possibility of contamination. This may be the result of inherent properties of the material (such as metals or alloys) or acquired characteristics, as through encapsulation. To qualify as a special form material, the radioactive material must be either in massive solid form or each capsule must either have no overall dimension less than 0.5 millimeter or have at least one dimension greater than 5 millimeters. Each item, or the capsule material, must not dissolve or convert into dispersible form to the extent of more than

0.005 percent, by weight, by immersion for one week in water at pH 6-8 and 68°F. and a maximum conductivity of 10 microhms/centimeter, and by immersion in air at 86°F. If in massive solid form, the radioactive material must not break, crumble, or shatter if subjected to the Type B package test and must not melt, sublime, or ignite at temperatures below 1,000°F. If encapsulated, the capsule must retain its contents when subjected to the aforementioned test and must not melt, sublime, or ignite at temperatures below 1,475°F.

Special nuclear material—Plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the AEC determines to be special nuclear material, but does not include source material artificially enriched by any of the foregoing.

Surveillance—Systematic observation, inspection, and investigation of explosives and other dangerous material.

Tariff—A publication containing rates, rules, ratings, regulations, and/or changes applying to transportation and incidental services.

Technical escort—The accompanying of a shipment of chemical agents or munitions, biological, or etiological materials or munitions or radioactive material by personnel qualified and equipped to assure a high degree of safety and security for the shipment.

Technical escort team—Two or more qualified civilian or military individuals who are accompanying a shipment of chemical agents and munitions, biological, or etiological materials, or radioactive material and who are qualified and equipped to assure a high degree of safety and security for the shipment.

Transport group—Any one of seven groups into which normal form radionuclides are classified according to radiotoxicity and their relative potential hazard in transportation.

Transport index—The number placed on a package to designate the degree of control to be exercised by the carrier during transportation. The transport index to be assigned to a package of radioactive materials shall be determined by either subparagraph (a) or (b), whichever is larger. The number expressing the transport index shall be rounded up to the next highest tenth, e.g., 1.01 becomes 1.1.

1. The highest radiation dose rate, in millirem per hour at 3 feet from any accessible external surface of the package.
2. For Fissile Class II packages only, the transport index number calculated by dividing the number "50" by the number

of similar packages which may be transported together.

Transportation officer—The person designated or appointed by the commander of a military activity to perform traffic management functions.

Transport vehicle—The conveyance used for the transportation of explosives or other dangerous articles and includes any motor vehicle, rail car, or aircraft. Each cargo-carrying body (trailer, van, box car, and so forth) is a separate vehicle.

**Type A packaging*—Packaging which is designed in accordance with the general packaging requirements of Title 49, part 173, is adequate to prevent loss or disposal of the radioactive contents and to retain the efficiency of radioactive shielding properties when the package is subject to the tests prescribed in part 173.

Type A quantity and Type B quantity radioactive materials—A quantity, the aggregate radioactivity of which does not exceed that specified as follows:

<i>Transport group</i>	<i>Type A Quantity (in curies)</i>	<i>Type B Quantity (in curies)</i>
I	0.001	20
II	0.05	20
III	3	200
IV	20	200
V	20	5,000
VI and VII	1,000	50,000
Special form	20	5,000

If the amount for Type A packaging is exceeded, then Type B packaging is required. If Type B packaging is exceeded, then a waiver must be obtained for shipment.

**Type B Packaging*—Packaging which meets the standards for Type A packaging and, in addition, meets the standards for hypothetical accident conditions of transportation as prescribed in Title 49, part 173.

Unrestricted area—Any area to which access is not controlled by the licensee or his authorized representative for the purpose of protection of individuals from exposure to radiation and radioactive materials.

User—The activity, section, division, or other organizational unit which has been assigned responsibility for the use, operation, or storage of radiation sources.

Vehicle—A self-propelled, boosted, or towed conveyance for transporting a burden on land, sea, or through air or space.



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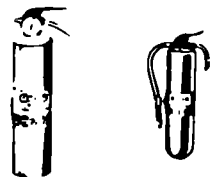
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	Vaporizing Liquid Type	Carbon Dioxide	Dry Powder	Soda Acid	Foam Type
The first three types of extinguishers have been prescribed by the I.C.C. for use on trucks. The last two types of extinguishers are usually used in shipping docks, garages and factories. Not approved for carrying on trucks. Learn how to operate all types.					
	1 1/2 qts.	20 lbs.	2 1/2 lbs. 4 lbs.	2 1/2 gal.	2 1/2 gal.
METHOD OF OPERATING	TURN HANDLE AND PUMP	OPEN VALVE	RELEASE SAFETY LOCK PULL TRIGGER	INVERT	INVERT
HOW TO USE	Handle of extinguisher unlocks by turning. Aim extinguisher at base of fire and pump. To extinguish flames in a container holding burning liquids, play stream against for inside wall of container.	Pull outlocking pin in handle. Hold horn in left hand and valve grip in right hand. Approach fire as close as possible and open valve, directing discharge at nearest edge of fire. Some models have wheel handle which turns to open valve.	Pull pin to release safety lock. Squeeze trigger valve on extinguisher or hose. On some types there is a separate device for puncturing gas cylinder. Hold extinguisher upright and aim nozzle at base of flame. Use sweeping motion on large area fire.	Carry in upright position by ring-top handle. To operate, invert grasping bottom handle. Hold hose in right hand. Let discharge fall lightly on fire.	Operates the same as wet chemical type. When used on blazing liquids, foam stream should be directed against the side of the container so that the foam drops gently on the surface of the liquid and forms a smothering blanket.
RANGE OF STREAM	20 TO 30 FEET	15 LB. SIZE 6 TO 8 FEET	3-12 FEET	APPROX. 30 TO 40 FEET	APPROX. 30 TO 40 FEET
KIND OF FIRES ON WHICH EXTINGUISHER IS MOST EFFECTIVE	Best Use On Flammable liquids Gasoline Oils and greases Paints, varnishes Solvents Electrical equipment Can Be Used On Textiles Paper Wood Rubbish Be careful against suffocation when used in tightly closed room. Note: None of these extinguishers are suitable for fires in metals such as magnesium, aluminum, sodium or fine steel turnings.	Best Use On Electrical equipment Flammable liquids Gasoline Oils and greases Paints, varnishes Solvents Can be used wherever smothering action is effective. Not particularly effective in high winds.	Best Use On Flammable liquids Gasoline Oils and greases Paints, varnishes Solvents Electrical equipment Can Be Used On Textiles Wood Paper Rubbish	Best Use On Wood Textiles Paper Rubbish Do NOT Use On Electrical equipment Flammable liquids Gasoline Oils and greases Paints, varnishes Solvents	Best Use On Flammable liquids Gasoline Oils and greases Paints, varnishes Solvents Wood Textiles Paper Rubbish Do NOT Use On Electrical equipment
NATURE OF PRINCIPAL EXTINGUISHING AGENT	Vaporizing Liquid resulting in an atmosphere of extinguishing vapor.	Carbon Dioxide gas produced when liquid is released from cylinder.	Dry chemical powder expelled by inert gas or air pressure.	WATER	FOAM Mass of durable bubbles filled with inert gas, floating on surface insulating against re-ignition.
PRINCIPAL EXTINGUISHING EFFECT	BLANKETING	"SNUFFING" OR BLANKETING	BLANKETING	COOLING AND DRENCHING	BLANKETING AND COOLING
EFFECT OF FREEZING TEMPERATURES ON EXTINGUISHER CHARGES	Extinguisher operates at a temperature as low as minus 48° F.	Approximate climatic operating temperatures 120 degrees above to 40 degrees below zero.	Not subject to freezing.	Will Freeze If exposed to freezing temperatures.	Will Freeze If exposed to freezing temperatures.
HOW TO CHECK FOR FULL CHARGE	Shake and weigh. If full, very little liquid slash can be noticed.	Weigh extinguisher. Check weight with full charge weight marked on extinguisher.	All types: Check amount and condition of dry powder. Gas cylinder types: Check condition of cylinder outlet, weigh and check weight with that stamped on cylinder. Gauge types: Check gauge reading periodically and check total weight of unit against marked weight.	Check weight. Check date of last recharge on tag.	Check weight. Check date of last recharge on tag.
RECHARGING PERIOD	RECHARGE ONLY AFTER USE Underwriters' Laboratories recommend extinguishers be partially discharged and refilled yearly.	RECHARGE AFTER USE Extinguisher Should Be Checked Annually by Weighing	RECHARGE AFTER USE Check condition of powder and gas cylinder annually.	YEARLY	YEARLY



APPENDIX N

TRANSPORT GROUPS OF RADIOACTIVE NUCLIDES

Element ¹	Radionuclide ¹	Transport group						
		I	II	III	IV	V	VI	VII
Actinium (89)	Ac-227	X						
Americium (95)	Am-241	X						
Antimony (51)	Sb-122			X				
Argon (18)	Ar-41		X					
Arsenic (33)	As-73			X				
Astatine (85)	At-211			X				
Barium (56)	Ba-131		X					
Berkelium (97)	Bk-249	X						
Beryllium (4)	Be-7			X				
Bismuth (83)	Bi-206			X				
Bromine (35)	Br-82			X				
Cadmium (48)	Cd-109			X				
Caesium (55)	Cs-137			X				
Calcium (20)	Ca-45			X				
Californium (98)	Cf-250	X						
Carbon (6)	C-14			X				
Cerium (58)	Ce-143			X				
Cesium (55)	Cs-137			X				
Chlorine (17)	Cl-36			X				
Chromium (24)	Cr-51			X				
Cobalt (27)	Co-57			X				
Copper (29)	Cu-64			X				
Curium (96)	Cm-242	X						
Dysprosium (66)	Dy-165			X				
Erbium (68)	Er-169			X				
Europium (63)	Eu-152			X				
Fluorine (9)	F-18			X				
Gadolinium (64)	Gd-153			X				
Gallium (31)	Ga-72			X				
Germanium (32)	Ge-71			X				
Gold (79)	Au-193			X				
Hafnium (72)	Hf-181			X				
Helium (2)	He-3 (see tritium)			X				
Hydrogen (1)	H-3			X				
Iodine (53)	I-124			X				
Iridium (77)	Ir-192			X				
Iron (26)	Fe-55			X				
Krypton (36)	Kr-85m			X				
Lanthanum (57)	La-140			X				
Lead (82)	Pb-210			X				
Lutetium (71)	Lu-177			X				
Magnesium (12)	Mg-28			X				
Manganese (25)	Mn-54			X				
Mercury (80)	Hg-197m			X				
Mixed Fission Products	MF-P			X				
Molybdenum (42)	Mo-99			X				
Neodymium (60)	Nd-147			X				
Neptunium (93)	Np-237	X						
Nickel (28)	Ni-63			X				
Niobium (41)	Nb-93m			X				
Osmium (76)	Os-193			X				
Palladium (46)	Pd-103			X				
Phosphorus (15)	P-32			X				
Platinum (78)	Pt-193			X				
Plutonium (94)	Pu-238	X						
Polonium (84)	Po-210	X						
Potassium (19)	K-42			X				
Praseodymium (59)	Pr-142			X				
Promethium (61)	Pm-147			X				
Protactinium (91)	Pa-231	X						
Radium (88)	Ra-226	X						
Radon (86)	Rn-222			X				
Rhenium (75)	Re-187			X				
Rhodium (45)	Rh-103m			X				
Rubidium (37)	Rb-86			X				
Ruthenium (44)	Ru-97			X				
Samarium (62)	Sm-147			X				
Scandium (21)	Sc-46			X				
Selenium (34)	Se-75			X				
Silicon (14)	Si-31			X				
Silver (47)	Ag-105			X				
Sodium (11)	Na-24			X				
Strontium (38)	Sr-85m			X				
Sulphur (16)	S-35			X				
Tantalum (73)	Ta-182			X				
Technetium (43)	Tc-99m			X				
Tellurium (52)	Te-125m			X				
Terbium (65)	Tb-160			X				
Thallium (81)	Tl-201			X				
Thorium (90)	Th-232			X				
Thulium (69)	Tm-168			X				
Tin (50)	Sn-113			X				
Tritium (1)	H-3			X				
Tungsten (74)	W-181			X				
Uranium (92)	U-235			X				
Vanadium (23)	V-48			X				
Xenon (54)	Xe-135			X				
Ytterbium (70)	Yb-175			X				
Yttrium (39)	Y-88			X				
Zinc (30)	Zn-65			X				
Zirconium (40)	Zr-95			X				

Transport group (see 173.389(h))	Type A quantity (in curies)	Type B quantity (in curies)
I	6,601	20
II	0.05	20
III	3	200
IV	20	200
V	20	5,000
VI and VII	1,000	50,000
Special form	20	5,000

¹ Atomic number shown in parentheses.
² Uncompressed means at a pressure not exceeding 14.7 p.s.i. (absolute).
³ Atomic weight shown after the radionuclide symbol.
⁴ Fissile radioactive material.

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FIELD MANUAL

No. 3-20

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DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 11 May 1972

TECHNICAL ESCORT OPERATIONS

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CHAPTER 1

GENERAL

Section I. INTRODUCTION

1-1. Purpose

This manual is to be used as a guide for training and employment of technical escort team personnel in the accomplishment of an escort mission. It is designed to provide the escort team leader and team personnel with basic information needed to react effectively to emergency situations involving the accidental release of toxic or radioactive materials to the atmosphere. The procedures outlined are designed to minimize the spread and effects of toxic or radioactive materials.

1-2. Scope

a. This manual describes the organization, responsibilities, and functions of the technical escort team, its operating procedures, the duties and responsibilities of personnel, and special problems affecting mission performance. The manual may be used in conjunction with both military and civil publications governing the movement of toxic or hazardous materials by rail, road, sea, and air. Other technical manuals must be used to provide specific data on supplies and equipment too detailed for the scope of this publication. Specific characteristics and handling procedures for a particular munition, the use of decontaminants, blocking and bracing requirements, and so forth can all be obtained from appropriate publications cited throughout this manual.

b. The methods and procedures described are applicable during emergencies, both in CONUS and in overseas theaters. However, the movement of hazardous cargo within an overseas theater is governed primarily by the theater of operations commander and circumscribed by the laws and regulations of that country.

c. Information provided in this manual is designed to describe general escort procedures and emergency reactions. Detailed and specific policies expressed by a service are not included except in situations where it is necessary for clarification of subsequent points.

d. This manual is in consonance with the following international standardization agreements, which are identified by type of agreement and number at the beginning of each appropriate chapter in the manual:

<i>Title</i>	<i>NATO STANAG</i>	<i>CENTO STANAG</i>	<i>SEATO STANAG</i>	<i>ABCA SOLOG</i>	<i>ASCC AIR STD</i>
Explosive Ordnance Disposal Training	2137		2137		
Definitions and Regulations for Military Motor Movements by ROAD	2154 (2d ed)	2154	2154		
Requisite Elements of Explosive Ordnance Disposal Activities and Capabilities	2312		2312		
Explosive Ordnance Disposal Equipment and Procedures	2313				
Organization and Doctrine for Explosive Ordnance Disposal Operations	2314		2314		
Air Transportation of Dangerous Cargo	3327 (2d ed)	3327	3327		44/9A
Restraint of Cargo in Fixed Wing Aircraft	3400		3400		44/14B
Classification, Certification and Labeling of Dangerous Cargo	3571				
Aircraft Cargo Tie-Down Fittings					17/38
Cargo Aircraft Tie-Down Fittings, Strength and Location					44/17A
Military Abbreviations					

1-3. Comments

Users of this manual are encouraged to submit recommended changes and comments to improve the publication. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons will

be provided for each comment to insure understanding and complete evaluation. Comments should be prepared using DA Form 2028 (Recommended Changes to Publications) and forwarded direct to the Commandant, US Army Chemical Center and School, ATTN: ATSCM-A, Fort McClellan, Alabama 36201.

Section II. RESPONSIBILITIES

1-4. General

Since the control and disposition of toxic materials are the responsibilities of the accountable service, regardless of its location, Joint Service Regulation AR 740-32 requires that each military service meet its own technical escort requirements for movement. Because of diversities of mission, interest, and requirements, each service is organized differently to meet its individual contingencies. This means that the organization to provide this service will vary between services. Although the technical escort organization is different, the overall team's functions, while on an escort mission, will remain relatively standard due to the nature of the escorted materials.

1-5. Mission

a. The mission of technical escort is to accompany shipments of certain chemical, biological, and etiological materials and chemical munitions with qualified personnel equipped to assure a high degree of safety and security of the shipment. In addition to this requirement, AR 740-32 imposes a responsibility for accompanying shipments of radioactive materials requiring a Department of Transportation (DOT) waiver or special permit. Possibly, at the scene rendering safe of CBR materials and subsequent disposal of CB materials and chemical munitions may also be required.

b. The technical escort team assigned an escort mission assumes responsibility from the point of departure until the shipment is delivered to the receiving agency except during an accident, when the responsibility is released to the Chemical-Biological Accident/Incident Control Officer (CBAICO). Escort responsibilities include—

(1) Assuring physical safety and security of the cargo to prevent loss, theft, and damage which may constitute a hazard to personnel.

(2) Protecting personnel (military and civilian) who may be endangered by contamination

in the event of an accidental release of hazardous material to the atmosphere.

(3) Making emergency repair of leaking containers or munitions during shipment.

(4) Rendering safe, or disposing of, any munitions during shipment, as necessary and within the team's capability.

(5) Decontaminating all objects or areas contaminated during an accident, within the team's capability.

1-6. Training

a. Each service is responsible for training its own personnel for technical escort operations. However, the Department of the Army has the responsibility for conducting the formal course of instruction for technical escort personnel for all services. Each service must provide new development items and necessary training aids and materials for the formal technical escort course, and also unit and other service-peculiar technical training as required.

b. In addition to the skills and knowledge pertaining to material for which they are responsible, escort personnel must be trained in their responsibilities to the civilian environments through which their cargoes move. Unlike the technical aspects of their duties, civil affairs cannot be reduced to specific methods or qualitative rules. A few principles must be emphasized.

(1) If an accident should occur, civilians in potential hazard may number many thousands.

(2) Fear of an accident may influence civilian conduct far beyond rational expectation of risk.

(3) Agitators (sometimes well-intentioned) may mislead the public prior to or during a cargo movement or interfere with appropriate measures after an accident.

(4) Escort personnel must be trained to expect and prepare for civil affairs during their

performance of duties. If they are unprepared, their problems will be multiplied—perhaps to a point that satisfactory solutions become almost impossible.

c. Technical escort training is conducted for all services at the US Army Chemical Center and School, Ft. McClellan, Alabama 36201.



CHAPTER 2

ORGANIZATION

(STANAG 2137, 3327, 3400, 3571)

Section I. INTRODUCTION

2-1. General

Each service has different technical escort requirements; consequently, the technical escort organization of each varies. Requests for technical escort services are covered in section II of this chapter. In general, the technical escort organization for each service is as follows:

a. Army. Army technical escort services are provided by the Technical Escort Center at Edgewood Arsenal, Maryland, with subunits located at Rocky Mountain Arsenal, Denver, Colorado, and Newport Ammunition Plant, Newport, Indiana. The Center is assigned both chemical and explosive ordnance disposal (EOD) personnel to accompany shipments of hazardous material.

b. Navy. Navy technical escort services are provided by Explosive Ordnance Disposal Group, Atlantic (EODGRUTWO) located at Fort Story, Virginia, and Explosive Ordnance Disposal Group, Pacific (EODGRUONE) located on Oahu, Hawaii. All Navy technical escort personnel are EOD-qualified and thus have a "rendering safe" and disposal capability.

c. Air Force. Air Force technical escort services are provided by the Air Force Logistic Command (AFLC) with headquarters at Hill Air Force Base, Utah (DSYT). Air Force technical escort personnel are not EOD-qualified nor will EOD personnel normally accompany shipments. EOD personnel will, however, be alerted and on a standby basis to be called to the scene of the accident-incident when their services are required.

d. Marine Corps. Technical escort services are provided each Fleet Marine Force by technical escort personnel assigned to the Ammunition Company, Force Service Regiment. These ammunition companies are located at Camp LeJeune, North Carolina; Camp Pendleton, California; Camp Hague, Okinawa; and in combat areas. Marine Corps technical escort personnel are not EOD-

qualified. EOD personnel will normally be utilized on an "on-call" basis.

2-2. Basic Team Organization

Generally, the individual team organization is determined by the size, mode of transportation, distance, and complexity of the mission. The availability of personnel and transport space also have influential effects. The criteria for determining the team size vary by service policies and are normally determined by several factors. Some of the factors determining the team size and organization are—

a. Mode of Transportation. The availability of railroad guard cars, highway escort vehicles, berthing space aboard ship, and space available aboard aircraft can physically limit the number of personnel that can accompany a shipment. The team organization and size must take into account the requirement for additional accommodations.

b. Amount of Material. Generally, large amounts of hazardous material would require additional technical escort personnel. For example, 100 loaded rail cars would require several guard cars of technical escort personnel spaced throughout the train as opposed to a small shipment requiring minimum escort personnel.

c. Length of Mission. The hours that escort personnel are actually involved in security, surveillance, and the like may also determine the size of the escort team. For example, a short one- or two-day mission could be accomplished with a minimum of personnel working long hours; but a cross-country mission, or one requiring a long period of time, would necessitate planning for additional personnel to allow for the adequate rest required to maintain the high degree of alertness demanded of technical escort personnel.

d. Material Escorted. The hazard of the agent

involved and the different degree of monitoring procedures required for different agents could also determine team size and organization. In addition, the condition of the material to be escorted is a major planning factor; i.e., old and obsolete leaking munitions require many more personnel than a shipment of new chemical munitions.

e. Two-Man Rule. The two-man rule requires the presence of two authorized personnel, each capable of detecting incorrect or unauthorized procedures with respect to the task to be performed and familiar with applicable safety and security requirements. Two authorized personnel

shall be considered to be present when they are in a physical position from which they can positively detect incorrect or unauthorized procedures with respect to the task and/or operation being performed. When application of the two-man rule is required, it shall be constantly enforced by the personnel who make up the team, both while they are accomplishing the task or operation assigned and until they leave the area which permits access. The security force shall assure that no lone individual is permitted in a limited and/or exclusion area unless he is further controlled by technical escort personnel.

Section II. MISSION PLANNING

2-3. Escort Service

The information necessary to obtain technical escort service should include as a minimum the data outlined in paragraph 2-4. Requests for technical escort service should be forwarded to the individual service as follows:

a. Army.

Commanding Officer

b. Navy.

(1) *Pacific area.*

Commander Mine Force
US Pacific Fleet
US Naval Station
Long Beach, California 90801

(2) *Atlantic area.*

Commander Service Force
US Atlantic Fleet
Norfolk, Virginia 23511

Copy to: Commanding Officer
EOD Group—Pacific
EPO San Francisco 96611

Copy to: Commanding Officer
EOD Group—Atlantic
Fort Story, Virginia 23459

Requests should be received 30 days in advance if practicable but, in an emergency, no less than 7 days before the desired shipping date.

c. Air Force. Major commands not possessing technical escort capabilities will forward requests to—

OOAMA (DS)
Hill Air Force Base, Utah 84401

with information copy to—

Headquarters, Air Force Logistics Command
(MMW)
Wright Patterson Air Force Base,
Ohio 45433

Requests should be received 30 days in advance if practical; but in emergency, not less than seven

days before the desired shipping date for CONUS shipments. Requests for outside CONUS shipments should be received 60 days in advance of shipping date; under expedited conditions not less than 21 days advance notification is required.

d. Marine Corps.

Commandant of the Marine Corps
(Code AO4F)
Washington, DC 20380

Requests should be received 30 days in advance if practical but, in an emergency, not less than 7 days before the desired shipping date.

2-4. Request for Escort

All technical escort requests should include the

necessary data to allow the technical escort unit sufficient information to begin the initial planning phase for the mission. The information in appendix B can be used as a guide. As a minimum, the request should include the following:

a. Items and quantity to be shipped to include—

- (1) Agent, if applicable.
- (2) Munition, if applicable.
- (3) Shipping dimensions (length, width, and height).
- (4) Weight (net and gross).
- (5) Type of container.
- (6) Security classification of shipment.
- (7) Mode of transportation desired.

b. Pickup point and destination of shipment.

c. Name of individual(s), with title(s) and telephone numbers, to contact at pickup point and destination.

d. Date shipment will be ready for consignor.

e. Date shipment is desired by consignee.

f. Special requirements placed on shipment by consignee.

g. Fund citation and authority to obligate funds in an amount sufficient for travel and other expenses incident to the escort service requested.

2-5. Shipments Requiring Escort

As outlined in AR 740-32, shipments requiring technical escort include—

a. Class A poisons (excluding nerve agents, biological materials, and potential chemical agents under development) except for separate shipments of quantities not exceeding in volume the space occupied by 100 pounds of water (1.6 cubic feet or 11.9 gallons). Approved DOT containers or military containers which equal or exceed the specifications of DOT containers must be used.

b. Nerve agents (e.g., G or V) and potential chemical agents under development, except for a separate shipment of one toxic gas identification set or one laboratory sample not exceeding one liter in volume. Approved DOT containers or military containers which equal or exceed the specifications of DOT containers must be used.

c. All etiological materials (except diagnostic specimens and etiological materials with 500 milliliters or less in the primary containers) provided the total quantity in any one vehicle, aircraft, or other conveyance does not exceed 3 gallons. The shipping agency will provide an effective decontaminant for those materials resistant to standard-type decontaminants used by technical escort personnel.

d. All radioactive materials which require a DOT waiver or special permit for shipment.

e. Materials which the commanding officer of an installation or transportation agency decides that it is necessary and in the best interests of the Government to move, because of inherent factors of public relations, security, economics, and degree of hazards involved.

Section III. THE MISSION

2-6. General

Road escort requirements can usually be expected in conjunction with shipment of dangerous materials by other transportation modes as well as for shipment exclusively by road. Regardless of the mode of transportation, the escort team must be trained to assume responsibility for the cargo from the moment it is received to the time it is released to the consignee at the destination. Likewise, several other activities must assume certain responsibilities in preparing, shipping, and receiving the cargo.

2-7. Escort Team

Upon reporting for a shipment, the Technical Escort Team should consider many checkpoints be-

fore departing with cargo. Initially, the team must be prepared for the mission. It must have all supplies, equipment, and the number and quality of transporting vehicles necessary for the mission (app C). Further, it is recommended that the team ascertain that the following actions are completed.

a. *Before Escort.*

(1) Each cargo vehicle is properly placarded in accordance with DOT regulations.

(2) The shipper has certified on the shipping order or bill of lading that the articles have been properly described, classified, packaged, marked, and labeled, and are in proper condition for transportation, in accordance with applicable DOT regulations (fig 2-1).

This is to certify that the above named articles are properly classified, described, packaged, and marked, and are in proper condition for transportation, according to applicable regulations of the Department of Transportation.

Signature _____

Printed Name _____

Position/Grade _____

Organization _____

Address _____

Phone No. _____

Date _____

Figure 2-1. Shipper's certificate.

(3) The cargo vehicle has been inspected (road) or certified (rail) if carrying Class A explosives.

(4) The blocking and bracing of the cargo has been certified in accordance with regulations.

(5) The blocking and bracing of the cargo conforms with Bureau of Explosives (BoE) approved drawings.

(6) When seals are used, the compatibility of the cargo is in accordance with DOT regulations, if mixed cargo is transported (app D).

(7) The cargo compartment seal number corresponds with that on the bill of lading, when necessary.

(8) All cargo is accounted for and a report is made to the home unit on the status of the mission: Time of anticipated departure and anticipated time of arrival at destination, condition of cargo, and status of personnel.

(9) Adequate protective supplies and equipment for crewmen of the operating transport are provided.

b. During Escort.

(1) The team's technical efficiency and morale are maintained during the mission.

(2) Scheduled stops are made or messing facilities are operated aboard the rail guard car as required.

(3) Sufficient walking guards are maintained to insure observation of all approaches to the cargo at all layovers.

(4) Surveillance is maintained by observation or testing, or by checking the seal on the cargo during scheduled and unscheduled stops.

(5) The cargo is inspected frequently to assure that any dangerous situations which may result in an accident are promptly corrected.

(6) A daily log is kept of actions occurring during the mission.

(7) Inspections of the cargo are regulated according to special permits and DOT regulations.

c. Conclusion of Escort.

(1) The cargo is inspected and inventoried before it is released to the consignee.

(2) Assistance is rendered to the consignee, if requested.

(3) Arrangement is completed for the return trip to the home organization or for routing to assume another mission, if necessary.

(4) An after-action report is completed upon return to duty at the parent organization.

2-8. Military Traffic Management and Terminal Service (MTMTS) (AR 55-355)

a. MTMTS operates as the traffic manager and terminal operator for all military services. It su-

pervises all functions incident to effective and economical procurement and use of commercial freight and passenger transportation service, including ocean terminal operation within CONUS.

b. In addition, in accordance with responsibilities identified in Joint Service Regulations AR 55-80 and AR 55-162, MTMTS operates as the DOD-designated agency to represent the DOD in coordinating all matters pertaining to public highways, including defense utilization of public highways, with civil and other appropriate highway authorities.

c. MTMTS insures that requirements of Federal, state, and other regulations as well as military regulations placed on shipments of explosives and other hazardous material are met by the military services. It is further responsible for obtaining commercial transportation for military shipments and for routing these commercial shipments of hazardous materials. Working with the installation transportation officer (ITO), and with Federal and state officials when appropriate, MTMTS provides valuable assistance in shipment planning.

2-9. The Consignor

The installation transportation officer is the consignor on all shipments from an installation. The shipping activity (accountable officer) provides the material to be shipped, packed, and labeled in accordance with pertinent regulations. The installation transportation officer as consignor must assure himself that material is properly marked, described, labeled, and loaded in accordance with applicable regulations and tariffs. The escort team may also check several areas or functions previously performed by the shipping activity only, to ascertain to its satisfaction that the cargo is adequately secured for a safe trip. The shipment can be rejected because of shortcomings noted in the shipper's performance of duty. Recommendations made by the escort team must be considered in order to avoid possible damage to cargo while in transit. The responsibilities of the shipping include—

a. Loading, blocking, bracing, and placarding cargo; certifying classified cargo and sealing the cargo compartment, when necessary.

b. Obtaining the rail guard car, and assuring the working condition of appliances and the cleanliness of shelter.

c. Certifying all shipping containers used and

the cargo when loaded from installation facilities and by installation personnel.

d. Inspecting the cargo vehicle and initiating appropriate inspection forms, when required (app E).

e. Briefing vehicle-operating personnel and initiating appropriate Department of Defense (DD) forms, when applicable.

f. Furnishing the Technical Escort Team and vehicle drivers with the necessary documents concerning the cargo, including the US Government bill of lading (Standard Form 1103), when applicable.

2-10. Consignee

The installation transportation officer, as the receiver, must verify the forecasted arrival date and time of the shipment. He must insure that qualified personnel are available to accept the cargo.

a. Personnel must be capable of evaluating any deficiencies noted and initiating the appropriate documents reporting these deficiencies.

b. Personnel will be required to unload cargo and possibly decontaminate and release the carrier's vehicle and equipment which may have become contaminated during shipment and later decontaminated. The previously decontaminated vehicle must be further certified as being safe for subsequent use by unprotected personnel.

c. The Technical Escort Team must be assisted in reconditioning the rail guard car before release. Personnel handling housekeeping expendable supplies and equipment will be a great help in this operation.

d. Guides must be provided to direct the Technical Escort Team with shipment to the exact off-loading area when delivery is made during the normal working day. This will avoid congesting traffic and creating potentially hazardous situations.

e. When the cargo arrives during nonduty hours, or hours of darkness, the use of guides is a necessity for safely directing the team to the off-loading site or designated holding area. If receiving personnel cannot be made available and the cargo must remain in custody of the escort team until the consignee can receive the cargo. Living quarters near the holding area will prove helpful to the team. If this is not feasible, transportation for the team between quarters and the holding area would be adequate.

2-11. Road Escort

The Technical Escort Team has complete jurisdiction over the shipment with the exception that the team has no jurisdiction over vehicles or drivers contracted by the US Government unless the contract so specifies. In a situation such as this, the team advises the vehicle operator only on those matters pertaining to the safety and security of the cargo. In preparing for the mission and in accepting the cargo, the teams should use checksheets to insure that all pertinent points are carefully checked before departure.

a. Road Operations. Two drivers should be assigned to each vehicle in the convoy and the prescribed protective equipment placed in the cab of each. Daily driving should be adjusted to the requirements of the particular mission, but whenever possible it should be limited to the military standard of 300 miles per day or 8 hours driving time, whichever comes first. Prior to departure, the team will insure that—

(1) There is adequate dunnage and cargo tiedown for each vehicle.

(2) Communication is established between vehicles.

(3) Safety inspection is performed on each cargo vehicle, prior to acceptance of the cargo.

(4) Copies of DD Form 626 (Motor Vehicle Inspection) and 836 (Special Instructions for Motor Vehicle Drivers) are properly completed and in the possession of each vehicle driver (app E and G).

(5) All drivers possess a current and valid operator's license for the vehicle and for cargo being transported.

(6) All cargo vehicles are properly placarded.

(7) All drivers and team members are knowledgeable about regulations and load restrictions for each state through which the convoy will pass.

(8) All drivers and team members are aware of predetermined rest locations, convoy speed, and final stop at the end of the day.

(9) The escort kit contains protective gear and equipment to meet emergency situations.

b. Surveillance and Security. The cargo vehicle must be under surveillance at all times. This can be accomplished by placing a team member in the cab of the cargo vehicle, following the cargo vehicle with the escort vehicle, and placing suffi-

cient guards to provide complete coverage of all approaches to the cargo vehicles during stops. The cargo should be inspected prior to convoy movement, at scheduled and unscheduled stops, and at the completion of the day's travel. All inspections will be conducted by a minimum of two persons outfitted in prescribed protective clothing. Vehicles' exteriors will be checked for signs of agent leakage. Interiors, if accessible, should be checked. Prior to inspecting vehicle cargo, available live detectors will be checked; and, if deemed necessary, tests will be made for agent presence using detection paper or kits. Cargo tiedown, chocking and bracing, and vehicle placards will be checked to assure stability and safety during transportation. Additional security considerations are contained in chapter 6, section II,

c. Convoy Operation. Convoys must be escorted by the minimum number of vehicles required by the states through which they must pass. For instance, one vehicle is required to lead the cargo and another vehicle to trail the cargo. When close control is required it is recommended that one escort team member be placed in every third vehicle. If the convoy becomes separated and no radio communication is being used, the escort team parent unit and the CONUSA movement monitor (para 3-2b) will be called upon to act as the control center for reuniting the convoy vehicles.

d. Vehicle Repairs. When a vehicle becomes disabled on a public highway, warning signals should be displayed immediately; the nature of the trouble should be determined, then promptly corrected. Primary consideration should be given to prompt repair of the vehicle. If necessary, the vehicle should be removed to a location where it will not interfere with the normal flow of traffic. The selected area should provide ample space for regulation parking.

(1) Based on existing circumstances, repairs should be made by the driver with or without local civilian assistance. Where government trucks are involved, assistance may be requested from a military installation if one is located within a reasonable distance. This provision does not apply to common carriers except that assistance may be extended under unusual circumstances or emergencies, to protect life or property or to expedite the delivery of war materials.

(2) If complete repairs cannot be accomplished within a reasonable length of time and the vehicle can be moved, it should be taken to a

specifically upon the quantity of material to be escorted and the duration of travel. A minimum of three escort personnel are required to accompany each aircraft carrying hazardous cargo.

(2) The escort team must ascertain that all members of the flight are equipped with the proper protective equipment and are proficient in its use. The team can normally expect an air crew of three on LOGAIR flights, and a crew of about six on other military flights.

(3) The escort team will brief all personnel on the flight concerning the cargo and emergency

procedures (para 2-16). The team leader will obtain a signed statement from the aircraft commander attesting that the briefing was made and was clearly understood (fig 2-3).

(4) The escort team kit should be located in the aircraft cargo compartment, accessible to the entire team. It should include appropriate protective, first aid, detection, repair, and decontamination equipment and supplies.

b. Flight Operations. While loading, appropriate placards and signs denoting the nature of the material being loaded must be properly dis-

DATE _____	
FLIGHT: _____	
This is to acknowledge that I, the aircraft commander, and my crew have been briefed by _____ of the USA Technical Escort Unit on the nature of the mission. The security classification is _____, the cargo is _____, the cargo hazards are _____, protective equipment is _____, and the decontaminant is _____; also, the standing operating procedure, authority, and capability of the escort team have been explained. I have been informed of the following logistical requirements _____	
NAMES OF CREW	NAMES OF ESCORT TEAM
_____ Signature of Aircraft Commander	
_____ Printed Name	

Figure 2-3. Aircraft commander's briefing acknowledgment.

played on the aircraft or on stands around the aircraft (chap 9, AFM 127-100). The aircraft commander, having been briefed as to the nature and hazards of the cargo, will consider the advice of the Technical Escort Team during inflight operations.

c. Cargo Tie-Down. The aircraft loadmaster is responsible for proper cargo tie-down. Escort personnel should be present during loading and unloading operations to lend technical assistance and insure proper handling of the cargo. Loading and unloading of the cargo should take place away from congested areas of the airport or air-base.

d. Surveillance.

(1) The escort team and designated crew members are the only personnel authorized to inspect hazardous cargo during flight. Air crew members desiring to inspect the cargo tie-down must do so under the supervision of escort personnel. The cargo should be inspected prior to take off, immediately after take off, during flight, after significant air turbulence, and immediately after landing.

(2) All cargo inspections will be accomplished by a minimum of two persons outfitted in the prescribed protective equipment. Cargo will be inspected to insure that no shifting or movement has occurred that could result in an accidental release of agent.

(3) If agent leakage is found, all personnel aboard the aircraft will be advised to don protective equipment. The escort team will initiate the applicable emergency procedure necessary to prevent further escape of agent.

2-14. Sea Escort

The Technical Escort Team accompanying a sea shipment has technical responsibility for the safety of any operation involving the shipment. However, since the captain of the ship has complete authority over any operation which is conducted aboard his vessel, any final action must be approved by the captain or his chief mate. The team has no authority over the ship's crew or the ship's operation; the master of the vessel has complete jurisdiction over the vessel, its operation, and crew. Several escort teams varying in size may be involved in a sea escort mission; e.g., one team may be required to pick up and escort the shipment to the port of debarkation; another team may make preparation at the port to accommodate the shipment; and a third team may be

required to escort the material to the overseas port of embarkation. This arrangement provides for more flexibility when the escort mission may take a long time.

a. Personnel.

(1) The size of the escort team is generally determined by the size of the shipment and the hazard involved. Team size may vary from 2 to 20 or more persons. The advance party assigned the duty of coordinating transportation for the sea escort phase is usually the smallest, sometimes consisting of only one or two individuals.

(2) The escort team accompanying the shipment to the port will be available to advise supervisory personnel on the proper safety procedures to be employed in the handling of chemical cargo when the cargo is at the port.

(3) The on-board ship team responsibilities commence upon arrival at the designated port of debarkation.

(4) While hazardous cargo is being loaded and unloaded, the escort team will advise the ship's captain as to the emergency equipment required at the site, and will, with the captain's permission, restrict the flow of personnel in the area.

b. Preloading Responsibilities. Prior to loading, the escort team will brief the ship's captain as to the nature of the cargo, necessary safety and security measures, and the need for equipment storage space aboard ship; and will make liaison with appointed ship officers concerning off-limit areas, ship policies, quarters, mess, laundry, and recreation facilities. The team leader will insure that all equipment including animals for a live alarm system are on board prior to loading and that all emergency equipment is easily accessible. An emergency command post must be set up to permit communications with all holds and levels where operations will be in progress. The Technical Escort Team will give safety training to the ship's crew at least two days prior to loading and will also participate in normal ship's damage control training at this time. The stow plan must be approved by the ship's captain prior to loading.

c. Surveillance. The ship's cargo will be inspected at the direction of the ship's captain, but preferably a minimum of twice daily. When surveillance is conducted, live detectors located in exhaust system ventilators will give a general indication if a leak has occurred during the period of absence. The condition of the hatch seal will

show if any forced entry attempts have been made. The status of communications with the command post and all other subpoints will be of vital importance if a leak occurs. Before entry into the hatch, appropriate protective equipment must be donned. Upon entry, the door seal should be removed and checked, and the status of live detectors inside the hold should be checked. Three persons are required to inspect the cargo. One inspector should remain outside while the other two check the cargo. While inside the hold, the inspectors should check the blocking and bracing, determine the existence of loose cargo or loose lumber, and then inspect the cargo for breakage or shifting. Finally, they should replace the hatch seal and record the seal number, time of inspection, and condition of the cargo. The escort team will be accompanied by a ship's officer at all times during inspection of cargo holds unless this requirement is waived by the ship's captain.

d. Notification. The escort team will make daily reports to the ship's captain as to the condition of the chemical cargo and will advise him as to problem areas. Any repair of cargo holds or modification to the stow plan must have his prior approval.

2-15. Communications

While conducting an escort mission, the escort team must have established a communications system. The type of communications recommended may consist of visual signal, wire, radio, or a combination of these. The type of communications used will in many instances be dictated by the mode of transportation. Whatever system is selected, the Technical Escort Team leader must ascertain that all team personnel thoroughly understand and are proficient in its use. The minimum communication requirements for a movement of CT materials are as follows:

a. Adequate intramovement (highway or rail) communication.

b. Sufficient telephone sets self-contained to permit maximum telephonic contact with state and local law enforcement agencies in event of an emergency.

c. Periodic telephonic contact with the proper CONUSA movement monitor.

2-16. Transport Crew Briefing

Before departing on the escort mission, the escort

team leader must brief the operator and crewmen of the transport on the nature and hazards involved with the cargo. Adequate information must be given to aid the operator in charge in making accurate decisions during emergencies. As a minimum, the briefing must include—

a. Location and Type of Hazardous Cargo Involved, and the Position and Status of the Cargo in the Transport. The hazards of the cargo must embrace the type, physiological effects, and its portal(s) of entry into the body.

b. Security, Classification, and Proper Handling Procedures. The security classification of the material being escorted must be known by all personnel. Proper handling may include the use of the "left-hand procedure" (Joint Service Regulation AR 95-27) when applicable; a determination that the cargo may or may not be jettisoned, and specific limitations involved; and other special handling precautions which might directly affect the purity or condition of the shipment.

c. First-Aid and Self-Aid Procedures. Personnel should be briefed on recognition of symptoms on exposure to the contents of the cargo. First aid, self aid, and the use of protective clothing and equipment should be explained and demonstrated.

d. Emergency Reaction Procedures. A detailed explanation should be given about the mission of the team if a leaker is discovered. During this explanation actions should be outlined that all non-team personnel must perform to minimize confusion, thus aiding the escort team in completing its functions. What information may or may not be given to the civil populace or news media should also be outlined. The name or title of the individual authorized to make the news release will be furnished. Reference should be made to example comments contained in appendix H.

e. Final briefing. A final briefing will be given to the escort team by the senior Navy safety officer or the ship's 1st mate as to the restrictions and methods of operation to be used in the cargo holds. This briefing will include a detailed explanation of fire fighting equipment, ventilation system, cargo escape routes, drain systems in the hold, and any other important details necessary to prepare the escort team to care for the chemical cargo, as well as the sequence of operation to be followed in case of a major accident (collision or fire).



CHAPTER 3

EMERGENCY PROCEDURES

(STANAG 2137, 2312, 2313, 2314, 3327, 3400, 3571)

Section I. SUPPORT AGENCIES

3-1. General

The military services take all possible measures to prevent a chemical/biological (CB) accident or incident. However, if an accident or incident does occur, all possible measures must be taken to save life, preserve health, and protect property. The service or agency having custody of CB material is responsible for all actions at the scene of an accident or incident involving the material. However, it is the responsibility of the service which becomes aware of the accident or incident under technical escort to take whatever measures possible within its capability to neutralize, prevent, or limit possible damage or injury pending assumption of control by the responsible service.

3-2. Army Area Commander

a. Responsibility. In CONUS the appropriate Army area commanders will be notified by the consignor of all shipments under technical escort from, to, or through their geographical areas of responsibility. In the event of an accident or incident, the Army area commander is responsible for control at the scene and for the return of the area to normal conditions. This includes elimination of the hazard or removal of the contamination.

b. Role of the CONUSA Movement Monitor. The CONUSA movement monitor is prescribed by AR 50-21 and is implemented by CONARC. This activity, located at an Army area headquarters, is responsible for receiving and using information to monitor CB shipments originating in, terminating in, or traversing the CONUSA area. This activity is also prepared to disseminate information concerning accident/incident control. This includes placing emergency teams (e.g., EOD) on standby and coordinating the CBAIC teams that provide for contamination control and decontamination. It is agreed that escort teams owe allegiance to their parent unit

and should keep them informed of progress made en route. However, it is imperative that the escort team notify the appropriate movement monitor of all actions taken and any requests for assistance. This will insure prompt response and complete coordination of effort.

c. Coordination of Effort. A CB accident requires the coordinated efforts of the agency having custody of the CB material, the major commander having CB accident/incident control (CBAIC) responsibility, and possibly certain technical specialists. Control plans are maintained, and emergency reaction teams are trained to bring any accident or incident under control as soon as possible. Teams available to the Army area commander include EOD, CBR Alpha, Medical Support, Provost Marshal, Physical Security, and Public Information Teams. Others which may be required include Decontamination, Aviation, Signal, and Legal Teams.

d. Plans. The plans of the major Army commanders normally include the following:

(1) The qualification and method of appointment of the on-scene commander, the CB accident/incident control officer (CBAICO), and administrative assistants.

(2) Hospitals, and administrative specialist support for CBAIC operations.

(3) Establishing and training necessary emergency teams.

3-3. On-Scene Commander

Major commanders responsible for CBAIC must be prepared to dispatch a general officer to the accident as the on-scene commander. When the on-scene commander arrives at the accident scene, he assumes responsibility for all forces and operations at the scene to include—

a. Security, safeguarding, and disposal of all classified material involved in the accident.

b. Surveys to determine actual and potential hazard areas and actions to minimize the hazardous effects of agents.

c. Public relations with civic groups, public information, and claims and reports resulting from the accident.

d. Requests for required assistance, control, and logistic support of observers and other authorized personnel at the scene.

e. Certification of clearance of contamination from the site, when applicable.

3-4. Chemical Biological Accident/ Incident Control Officer

Each commander having CBAIC responsibilities will designate a CBAICO. He will assume control of all emergency teams at the accident site and supervise operations in the name of the commander. Each CBAICO will be qualified by experience or specialist training to coordinate the activities associated with the CBAIC. He will be responsible for the duties listed in paragraph 3-3 until relieved by the on-scene commander. Reaction teams available to the CBAICO consist of personnel who are trained in their specific occupational specialty and can render aid as appropriate.

3-5. Explosive Ordnance Disposal Team

The EOD team will, when required, render safe all weapons and advise on evacuation of hazardous items from the scene of an accident or incident. The team commander advises the CBAICO on requirements for render-safe procedures and on evacuation of the hazardous CB material and associated component. He also acts as the CBAICO, if he arrives at the scene prior to the CBAICO and is senior to the senior serviceman present. Other detailed functions and responsibilities are included in Joint Service Regulation AR 75-14, AR 75-15, FM 9-15, and CON Supplement 1 to AR 75-15.

3-6. CBR Team

This team advises on CBR problems, including any requirement for assistance from specialists from Edgewood Arsenal and US Army Biological Defense Research Center, Fort Detrick, Maryland. The team should be capable of arrival at an accident scene within 4 hours, depending on weather conditions. It must be prepared to—

a. Assist the technical teams in performing their functions.

b. Determine the extent of hazard and identify the agent involved.

c. Direct the survey, marking, and recording of the contaminated area; recommend procedures for controlling the movement of personnel and equipment into and out of the contaminated area; decontaminate personnel and equipment; and advise and assist in decontaminating buildings and land surface.

d. In conjunction with the chemical or biological medical consultant (para 3-7) and technical representatives from other Government agencies, as appropriate, advise the on-scene commander when it is safe for unprotected personnel to enter the area.

3-7. Medical Support

a. A chemical or biological medical consultant, designated by The Surgeon General will be available to the on-scene commander, CBAICO, or the commander of a military hospital to advise on CB health hazards, exposure level criteria, and the best or most appropriate treatment of casualties.

b. Emergency medical teams, formed from resources available to commanders responsible for CBAIC, will support CBAIC plans.

c. When responding to CB accidents or incidents, they carry protective clothing and equipment, the medical equipment set for chemical agent casualty treatment, and other medical supplies necessary for treatment of CB casualties.

3-8. Military Police/Security Police Traffic and Physical Security Team

The area Provost Marshal or security officer advises on physical security matters and traffic control. He also coordinates with representatives of police agencies and with law enforcement agencies of other services. The traffic and physical security teams assist in securing the area and controlling vehicular and pedestrian traffic into and out of the area. The teams can be obtained through coordination with the local Provost Marshal or Security Officer.

3-9. Public Information

Although the technical escort team has in its possession a prepared news release (app H), the necessity for a trained information officer and personnel depends on the severity of the situation.

The information officer advises on information policies and other requirements of general interest to the public.

3-10. Other Technical Personnel or Teams

Other technical personnel or teams may be requested as needed at the accident site. Examples are—

a. A decontamination team, consisting of personnel trained in the use of special supplies and equipment for rendering a contaminated area safe.

b. An Aviation team, which may be used mainly to provide transportation of personnel and supplies to and from the site. In isolated areas, this team would be essential.

c. A Signal team, which may be required to provide and maintain communications and power in the vicinity of the emergency area. Communications and power would be essential to maintain a 24-hour operation.

d. A legal team (JAG) to settle civil claims against the Government and protect the rights of personnel at the accident site.

3-11. Military Installations

Military facilities throughout CONUS play an important role for the Technical Escort Team during an accident situation. The network of communications available provide for quick notifications of emergency and response to emergency requests. Installations handling or anticipating handling toxic material must plan, train, and keep on a standby basis a disaster-control or disaster-preparedness team for contingency purposes.

a. Any command having physical custody of toxic material is responsible for control, security, and handling, and for insuring that proper maintenance and transport procedures are followed. Installations having reaction teams can provide emergency services and aid during accidents presenting a hazard to both the civil and military populace. These teams must be thoroughly trained to respond properly to hazardous situations involving toxic material. They must be familiar with the responsibilities, role, and location of other reaction teams.

b. In addition to providing emergency reaction assistance, when a capability exists, the installation can assist the Technical Escort Team in

other ways. To mention only a few, having a direct communications source and supply stores, the military base can aid in notifying the Army area commander and the technical escort team's parent unit; and can provide decontaminants and other supplies, and transportation.

3-12. The Technical Escort Team

Whenever an accidental release of chemical or biological materials occurs, the immediate tasks of technical escort personnel are controlling contamination, protecting life and property, and restricting admittance to the area. A checklist (app I) will aid the team in ascertaining that all pertinent tasks are accomplished.

a. In protecting personnel in the immediate vicinity, the team must determine if personnel involved are contaminated and require first aid treatment or evacuation. The team must further decide if personnel in the immediate vicinity of the accident must be evacuated because of non-availability of protective devices.

b. Notification of proper authorities in regard to the location of the accident and obtaining appropriate assistance must be initiated immediately. The team should solicit assistance from the most immediate source, the local or state law enforcement agency, parent unit, the Army area commander, the nearest military installation, and other agencies as designated by service regulations and the unit SOP. The commander of the nearest military installation should take such immediate emergency action as may be necessary within the limits of his capability to minimize the initial results of the accident.

c. Assessing the extent of leakage and isolating the leaker is necessary to determine the seriousness of the situation and allow accurate reporting of the accident. Only trained personnel with proper protective equipment will be allowed in the immediate accident area. When the situation involves both toxic agents and explosives, an immediate exclusion area should be established. If munitions with toxic agents or explosives are endangered by fire, special precautions must be used when working in the immediate danger area.

d. Containment to minimize leakage and contamination should be effected as soon as possible to reduce or stop agent leakage. Techniques for sealing will vary depending on the type of agent, the type of container, and the type of sealant involved (para 3-17). If the hole is very large and

most of the agent has leaked out, the container should be closed for shipment to a military disposal site or disposed of at the accident site by chemically neutralizing the agent. Neutralization while at the accident site may be the most rapid method of handling the overall hazard and may eliminate the need for extensive packaging. If the situation does not permit immediate chemical neutralization, package the container for shipment to the nearest military disposal site.

e. All areas known or suspected to be contaminated should be restricted. During the initial survey or reconnaissance of the accident area, the observer must be alert in noting areas of light contamination and gross contamination. Although it is most desirable that the entire accident area be restricted, those areas presenting the most hazard must be given the highest priority because of the size of the escort team. Only authorized personnel with appropriate protective equipment should enter the restricted area. The control of supplies and equipment into and from the area is mandatory. Contaminated items must remain in the restricted area until declared safe by decontamination personnel.

f. Decontamination and disposal should be performed as required. The amount of decontamination a technical escort team is capable of performing during an emergency will vary depending on the size and extent of contamination, agent properties, weather, surface contaminated, decontaminants, and method of decontamination. Areas presenting the most hazard to personnel and op-

erations should be given the highest priority for decontamination.

g. The technical escort team leader will brief the CBAICO upon his arrival at the scene and then assist the CBAICO in the on-scene operations.

3-13. Civil Law Enforcement Agencies

State and local law enforcement personnel can be of immediate assistance to the technical escort team. These personnel are not only trained in techniques of enforcing the law but they are also knowledgeable in handling people and initiating emergency first aid measures. Having an immediate communication facility, these agencies can be used to rapidly notify and request aid from local public health personnel, medical personnel, and needed emergency facilities. Law enforcement personnel can also assist in notifying the nearest military activity, directing traffic, evacuating personnel from the accident area, and controlling personnel in the accident area.

3-14. Technical Escort Unit and CONUSA Movement Monitor

The parent technical escort unit and the CONUSA movement monitor, once alerted of an accident sustained by a team, must notify designated agencies and maintain current data on the status of the accident situation. The unit should promptly notify the consignor, the consignee, and other concerned headquarters in accordance with service regulations.

Section II. CONTAMINATION CONTROL

3-15. General

Repair and decontamination of leaking munitions and shipping containers are a primary technical escort field of interest. Permanent repair of leaking munitions or containers is not within the scope of the team responsibility or capability. Only such repairs as will cause the least delay to the shipment while assuring public safety will be made. Decontamination of any released agent must be thorough in order to avoid subsequent injury to personnel. Decontamination operations should be carried out in accordance with TM 3-220, or recommendations of the shipping agency. Testing following each decontamination effort should be performed to insure thoroughness of decontamination and to prevent any unnecessary delay of the shipment.

3-16. Leak Suppression

The best method for sealing a leaking munition or shipping container will be determined by the situation or circumstances at the time. The technical escort team can only anticipate the type of leak-sealing material required for a mission based on the type and nature of munitions or shipping containers being escorted. These munitions and containers have been engineered and packaged to prevent leakage; however, during manufacture, it is possible that welded seams or lamination may contain voids, or fittings and connector joints were not properly torqued. Vibrations experienced during transportation could work fittings loose or fracture welds, resulting in slight leakage. This type of leakage can normally be stopped by rotating the item so that the leak is

time, unfavorable conditions, and proximity of contamination to unprotected personnel usually prohibit the use of this method. Some of these effects of the elements of weather on contamination are discussed in more detail in paragraphs 3-22 and 3-23.

3-21. Decontaminants

The decontaminant to be used by the technical escort team in decontamination operations must be carefully chosen before the mission commences. Some factors to be considered are the agent to be decontaminated, the type of surface contaminated, possible agent concentration, time available for decontamination, the surface to be decontaminated, and the climatic condition which might prevail.

a. The Agent To Be Decontaminated. The decontaminant selected must be effective for the agent being transported. It should not interfere with the method of detecting the agent. For example, caustic soda is an excellent decontaminant for "G" agents; however, the color change it produces on contact with ABC-M8 VGH chemical agent detector paper is similar to the color change produced by GB. Following the application of caustic soda, it would be difficult to decide if the item is still contaminated with G agent or if it has residue of caustic soda if M8 detector paper is used. When a decontaminant of this type is used, the user should take added precautions in testing for the agent following the decontamination operation by using a vapor detector.

b. The Type of Surface Contaminated. Liquid chemical agents behave differently on various surfaces. Porous surfaces absorb the agent readily while non-porous surfaces tend to absorb lesser amounts of agents, allowing the agent to accumulate or permitting agent runoff. Either of these situations makes decontamination difficult. It is necessary to remember that a decontaminant must come into intimate contact with the chemi-

cal agent for sufficient time to allow the neutralizing chemical reactions to take place. Intimate mixture is extremely difficult to obtain when the chemical agent has adsorbed into a surface. Liquid chemical agent absorbed into the earth is not necessarily effectively neutralized by spreading an appropriate liquid or solid decontaminant over the surface. The decontaminant must be mixed into the ground to at least the depth of penetration of the agent. On public or private property, removal of the contaminated surface may be the only way to insure total decontamination. On porous material where intimate mixing of the decontaminant and the agent cannot be obtained, decontamination of the agent may be impossible except by complete removal and subsequent destruction of the material. When burning is not feasible, the contaminated area may be sealed in place until removed for disposal.

c. The Time Available for Decontamination. The time available for decontamination is an important factor in reacting during an emergency situation. When nonpersistent agents are exposed to the atmosphere, decontamination must be effected quickly to minimize the amount of agent traveling downwind. Normally, the technical escort team or other emergency reaction team will take the required time to insure absolute decontamination of an area before it is recommended for release for public use.

d. Concentration of Agent. The amount of decontaminant necessary for complete decontamination of an agent is proportional to the concentration (amount) of chemical agent present. An excess of decontaminant is necessary to insure maximum neutralization of the agent. The information in table 3-1 is based on the assumption that intimate mixing of the agent and the decontaminant is achieved. The effects of different surfaces and of temperature extremes are not considered in the table. A minimum of 10 percent excess decontaminants is necessary.

Table 3-1. Amount of Decontaminant per Weight of Agent
Decontaminant (kilogram)

Agent one kilogram	DS2	DANC	STB	Sodium hydroxide	Sodium carbonate
GB	20	--	1.5	.5 (solid)	.7 (solid)
GA	20	--	1.5	.5 (solid)	.7 (solid)
HD	50	3.0	2.3	--	--
VX	10	--	--	--	--

Note. TM 3-220 states that the amounts listed in this table are calculated on the basis of available information, assuming intimate mixing of the decontaminant and the agent. A minimum of 10 percent excess decontaminants should be added to these amounts. This information is intended only as a guide.

3-22. Effects of Weather, Vegetation, and Terrain on Chemical Agents

To understand the weather elements on the micrometeorological scale is to appreciate their variability patterns and the difficulties involved in coping with adverse conditions. Detailed information on weather effects is beyond the scope of this publication. For additional information, consult joint service manuals FM 3-10 and TM 3-240. Evaporation and decomposition of chemical agents are the principal means by which the weather gradually accomplishes decontamination. Weathering is the easiest method of decontamination; however, lack of time, unfavorable conditions, or proximity of the contamination to unprotected personnel usually force the escort team to use a faster and more precise method. Some weather elements affecting the general behavior of airborne chemical agents include wind, temperature, temperature gradient, humidity, clouds, and precipitation.

a. *Wind.* Wind direction, speed, and turbulence directly affect the distance and the rate chemical vapors will travel in a given direction.

(1) *Direction.* The direction of the wind determines the course the agent will travel and who will be affected by the cloud. The escort team must ascertain that people occupying areas in the possible path of the agent are warned of the anticipated danger. If an accident occurs in or near a built-up area, variable winds will probably present the most problems in the evacuation of personnel from the area since it must be anticipated that contamination will spread in various directions instead of a single direction.

(2) *Speed.* Wind speed will be a primary factor in estimating the length of time it will take an agent cloud to reach a particular point downwind. High wind speed moves the agent more rapidly; however, the agent cloud rapidly breaks up and dissipates proportionately. Slow, variable winds present more problems because the agent cloud remains intact in the area for a longer period of time. Wind speed can be conveniently estimated using the Beaufort scale (table 3-2).

Table 3-2. Beaufort scale

Beaufort number	Name	Miles per hour	Description
0	Calm	Less than 1	Calm; smoke rises vertically.
1	Light air	1-3	Direction of wind shown by smoke but not by wind vanes.

Beaufort number	Name	Miles per hour	Description
2	Light breeze	4-7	Wind felt on face; leaves rustle; ordinary vane moved by wind.
3	Gentle breeze	8-12	Leaves and small twigs in constant motion; wind extends light flag.
4	Moderate breeze	13-18	Raises dust and loose paper; small branches are moved.
5	Fresh breeze	19-24	Small trees in leaf begin to sway; crested wavelets form on inland waters.
6	Strong breeze	25-31	Large branches in motion; telegraph wires whistle; umbrellas used with difficulty.
7	Moderate gale	32-38	Whole trees in motion; inconvenience in walking against wind.
8	Fresh gale	39-46	Breaks twigs off trees; generally impedes progress.
9	Strong gale	47-54	Slight structural damage occurs; chimney pots and slates removed.
10	Whole gale	55-63	Trees uprooted; considerable structural damage occurs.
11	Storm	64-72	Very rarely experienced; accompanied by widespread damage.
12-17	Hurricane	73-136	Devastation occurs.

(3) *Turbulence.* Normally, the flow of air near the earth's surface is not steady but is in successions of gusts and lulls that are somewhat variable in direction, strength, and duration. This irregular motion, turbulence, may be classified as mechanical or thermal (fig 3-7).

(a) *Mechanical turbulence* results from surface roughness (e.g., trees, hills, and buildings) and wind speed. The passage of air over the uneven surface of the ground always creates eddies and gusts that are more pronounced with high wind speed and rough surfaces than with low wind speeds and smooth surfaces.

(b) *Thermal turbulence* results from convection currents from the heated surface. The air next to the surface, being warmer than its environment, tends to rise and expand and to be displaced by descending or surrounding cooler, den-

of the quantity of water vapor in a given space compared with the quantity of water vapor that this same space of air would contain if it were saturated (at the same temperature and pressure). In warm air, high relative humidity indicates a high absolute humidity; in cold air, high relative humidity does not indicate high absolute humidity because cold air cannot hold as much water vapor per unit volume as warm air. The amount of water vapor in the atmosphere will directly affect the amount and rate of vaporization of exposed liquid agents. It will also influence the length of time personnel can work while wearing protective clothing.

e. Clouds. Technically speaking, clouds are not micrometeorological weather elements, but they may affect the weather in the 4-meter level. If the sky is covered with clouds, radiation either to or from the earth's surface is reduced. The amount of radiation and the effect on temperature and the vertical temperature gradient depend on coverage height and thickness of the cloud. This could directly affect the rate of agent evaporation from a spillage and also the rate and dispersion of the agent as it travels downwind.

f. Precipitation. Precipitation (rain or snow) is not a micrometeorological element, but its effect on microweather and exposed liquid chemical agents must be considered. Rain rapidly spreads liquid contamination, and snow covers and aids in freezing liquids.

g. Relative Factors. Other factors affecting exposed liquid agent include soil and vegetation.

(1) *Soil.* The type of soil will affect the persistency of the agent. Sandy soil will tend to absorb the agent at a rapid rate and release it at a slower rate, thus increasing the agent persistency. Rocky soil will slowly absorb the agent, thus increasing its persistency. It will allow the agent to pool, thus exposing the liquid to elements of weather for vaporization. The lowest persistency on the ground is on nonporous, hard, smooth surfaces such as paved roads. Heat emitted from the surface will greatly increase the rate of vaporization, thus presenting greater hazard from airborne contamination.

(2) *Vegetation.* Not only the amount but also the type of vegetation will affect the persistency of chemical agents. Chemical agents tend to collect on vegetation, which greatly increases the liquid hazard. Dense broad leafy vegetation will shade the contaminated area, thus increasing the agent persistency. Decontamination in vegetated areas is more difficult than open areas.

3-23. Effects of Weather, Vegetation, and Terrain on Biological Material

The effects of weather on biological material may be different from those on chemical agents. Detailed information on the subject can be found in TM 3-240. Weather, vegetation, and terrain have the following effects on a biological aerosol.

a. Wind. An aerosol, composed of particles containing microorganisms, will be moved along by the force of the wind. The area covered will depend on the wind speed and direction. A dry agent will be more difficult to control than a wet one.

b. Temperature. Normal atmospheric temperatures have little direct effect on the microorganisms in a biological aerosol. An increase in temperature is normally followed by an increase in the evaporation rate of the aerosol droplets. High temperatures (170° F. to 180° F.) kill most bacteria as well as the viral and rickettsial material. However, these temperatures are not normally encountered under natural conditions. Extremely low temperatures will decrease the decay rate or help preserve the life of the material. Exposure to ultraviolet rays from sunlight increases the decay rate and therefore has a destructive effect.

c. Temperature Gradient. Lapse, inversion, and neutral temperature gradients affect the biological agent aerosol in a manner similar to that in which they affect a chemical cloud (para 3-22c).

d. Relative Humidity (RH). This is the ratio (expressed in percentage) of the quantity of water vapor air would contain if it were saturated. Its effect depends on the type of aerosol (wet or dry). With a high RH and a wet aerosol, evaporation is retarded. Evaporation of the tiny droplets of agent will result in the death of the wet microorganisms. Conversely, a low RH with a dry agent is desired because excess moisture speeds up the life cycle and increases the decay rate.

e. Clouds. A heavy cloud cover will restrict the amount of destructive radiation from sunlight.

f. Precipitation. Precipitation will wash the suspended particles from the air.

g. Vegetation. When the aerosol lands on vegetation, it reduces the concentration as a result of dispersion onto grass, trees, and leaves.

h. Terrain Contour. Rough terrain creates

wind turbulence and hence has an influence on the vertical diffusion of the aerosol.

3-24. Reaction at an Accident Site

At the accident site, the escort team must immediately assume command. When other emergency reaction teams arrive, the escort team OIC may still be required to direct operations if he is the senior military representative present. Assuming the responsibility of the site commander, the team must—

a. Determine, if possible, the extent of hazard involved, initiate necessary emergency procedures, and report the accident to the proper authorities.

b. Establish an exclusion area around the accident site as necessary. The radius of the exclusion area around the accident site should be a minimum of 450 meters. This initial exclusion area can be further adjusted as the situation dictates. All unprotected personnel must be evacuated from this area, and all personnel performing the evacuation must wear the minimum protective equipment commensurate with seriousness of the accident and the necessity of removing personnel from the area of hazard. For chemical agents/biological material, the specific protective clothing includes a protective mask and other readily available protective clothing that would be required for the specific agent involved.

c. Initiate rescue operations and first aid measures for injured personnel determined to be in the hazard area.

d. As the situation allows, initiate action to establish a command post outside the exclusion radius if the situation requires one. The CP should be located in an uncontaminated area upwind of the contamination a minimum of 450 meters away from the accident.

3-25. Organizing the Command Post

a. *Site Selection.* In most situations, the escort team will be primarily concerned with or committed to other tasks until help arrives at the scene. However, as time permits, the team must give consideration to establishing a command post for controlling all emergency operations. In selecting the CP, the team must take into consideration the location of the accident. Some points to consider include the following:

(1) Approach to the accident/incident area must be made from an upwind direction. Protec-

tive mask and possible protective clothing will be worn by all personnel entering the area, as the situation allows.

(2) The CP should be located, if possible, away from built-up areas and main highway arteries, but situated to permit adequate road access, to include access for emergency vehicles.

(3) The selection of high ground giving a view of the accident is ideal. This will facilitate direction of personnel and ease of communication. Low areas should be avoided since agent clouds normally settle in valleys during periods of inversion conditions and flow along intact during neutral conditions.

(4) The selection of an area affording protection from fragmentation of munitions is appropriate when fire is associated with the accident. The CP must be out of range of possible fragments of high explosive components of the munition.

b. *Checking for Contamination.* After selection of the site, the area must be checked for contamination if any container exploded or burst during the accident. As in all situations when working with toxic chemicals, a team of two persons dressed appropriately for the mission will perform tests with the chemical agent detector kit. A thorough check should be made of the command post area (FM 9-15). The surface of the ground should be visually checked for obvious liquid agent contamination and should be sampled with ABC-M8 VGH chemical agent detector paper. Other vapor tests should be made as necessary to confirm or disprove suspicion as appropriate. Since biological material, liquid or dry, cannot be detected by current field detection procedures, the absence of this contamination must be determined from the indicators at hand. If all checks are negative, personnel will remove protective equipment but must remain alert for possible symptoms. Detailed checking of the CP site for contamination may be eliminated if it is obvious that the area is free of contamination.

c. *Initial Hazard Area.* The initial downwind distance extends 2,000 meters downwind from the accident/incident site. The downwind hazard area is established by extending two radial lines at an angle of 20 degrees on either side of the primary wind direction (total angle of downwind hazard area of 40 degrees). Two buffer zones, extending from the edge of the initial exclusion area, are then drawn to intersect the right and left radial lines as shown in figure 3-9. It may be necessary

uniforms, the individual can select and wear a variety of components to provide him varying degrees of protection commensurate with the degree of hazards involved.

b. Impermeable Protective Clothing. Impermeable protective clothing is made of cotton cloth coated on both sides with butyl rubber. The material does not allow the passage of air through its fabric and, therefore, provides adequate protection against chemical agents and liquid biological material. This clothing is intended primarily for protection of personnel engaged in extremely hazardous decontamination work or in other special operations involving danger due to spillage or splash of liquid agent. For specific details, see TM 10-277.

c. Permeable Protective Clothing. Two types of permeable protective clothing have been standardized. Both uniforms use the same principles of protection. Both have been treated with a chemical compound which neutralizes vapors and small droplets of mustards and V agents. The chemical protective clothing outfit consists of a single layer of impregnated cotton material, and the vesicant agent protective ensemble consists of two sets of impregnated garments. For specific details, see TM 10-277.

3-28. Protective Masks

There are many protective masks available to technical escort personnel when transporting toxic material. These masks alone are sufficient to provide respiratory protection for personnel handling field concentrations of chemical agents or biological materials or concentrations of 2 percent by volume or less.

a. Field Protective Masks (Fig 3-10).

(1) The M17-series chemical-biological field protective masks (TM 3-4240-202-14/TM 3-4240-258-14) are standard issue equipment for respiratory protection. Although they provide adequate protection, they are not normally used when the situation requires the use of the M3 toxicological agents protective outfit. The hood used with the M3 toxicological agents protective suit was not designed to permit its use with the M17-series masks.

(2) The ABC-M24 aircraft chemical-biological protective mask is normally used by aircraft pilots when the situation requires respiratory protection during flight. Accessories to this mask permit the use of both the emergency oxygen

source and communications equipment while in flight. Technical escort personnel may also use this mask so that communications with flight personnel can continue during emergency situations aboard the aircraft.

b. Special Purpose Masks (Fig 3-11).

(1) The M9A1 special purpose chemical-biological protective mask (TM 3-4240-204-14) is especially suited to technical escort personnel because of its compatibility with the M3 toxicological agents protective outfit. The mask provides adequate protection against field concentrations of all known enemy chemical agents; however, it should not be used for protection against commercial gases such as ammonia and sulfuric acid.

(2) The M10 acid and organic vapors gas mask (TM 3-4240-230-12) is a noncombat mask intended for use by personnel when handling chemicals which give off toxic acid and organic vapors. Protection is specifically provided against chlorine, hydrogen cyanide, sulfuric oxide, and carbon tetrachloride in concentrations not exceeding 2 percent.

(3) The M11A1 all-purpose gas mask (TM 3-4240-231-12) is used by both military and civilian personnel handling chemicals which give off toxic vapors and fumes in concentrations not to exceed 2 percent. The mask is not intended for use in firefighting; however, it will provide protection against 2 percent concentrations of carbon monoxide.

(4) The M12 ammonia gas mask (TM 3-4240-232-12) is used for protection from ammonia and hydrazine in concentrations not exceeding 2 percent. The mask canister is filled with silica gel. This mask is not intended for use against chemical agents and smoke.

3-29. Breathing Apparatus (Fig. 3-12).

a. The M15 compressed air breathing apparatus (TM 3-4240-224-12) operates independently of outside air. It is designed for use where a deficiency of oxygen or a high concentration of toxic vapor, gas, dust, or smoke precludes the use of an air-purifying canister-type mask. It is adaptable with the M3 hood for the toxicological agents protective outfit. The air tanks of the unit must be worn outside of the butyl rubber uniform and can become contaminated externally when used in a contaminated area.

b. The M20 oxygen generating breathing apparatus (TM 3-4240-212-15) operates indepen-



1. ABC-M17 CHEMICAL-BIOLOGICAL
FIELD PROTECTIVE MASK



2. M17A1 CHEMICAL-BIOLOGICAL
FIELD PROTECTIVE MASK



3. ABC-M24 AIRCRAFT CHEMICAL-BIOLOGICAL PROTECTIVE MASK

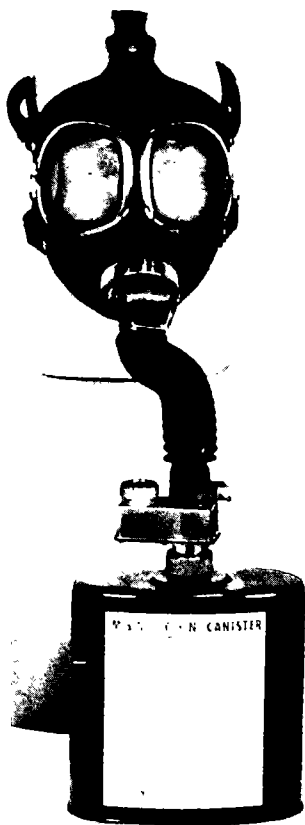
Figure 3-10. Field protective masks.



1. M9A1 SPECIAL PURPOSE CHIMICAL-BIOLOGICAL PROTECTIVE MASK



2. M10 ACID AND ORGANIC VAPORS MASK



3. M11 ALL-PURPOSE GAS MASK



4. M12 AMONIA GAS MASK

Figure 3-11. Special purpose masks.

dently of outside air. It is designed for use where a deficiency of oxygen exists or where a high concentration of toxic vapor, gas, dust, or smoke precludes the use of an air-purifying canister-type

mask. The canister if the M20 mask removes carbon dioxide and moisture from exhaled breath and generates oxygen to replace that used by the individual.

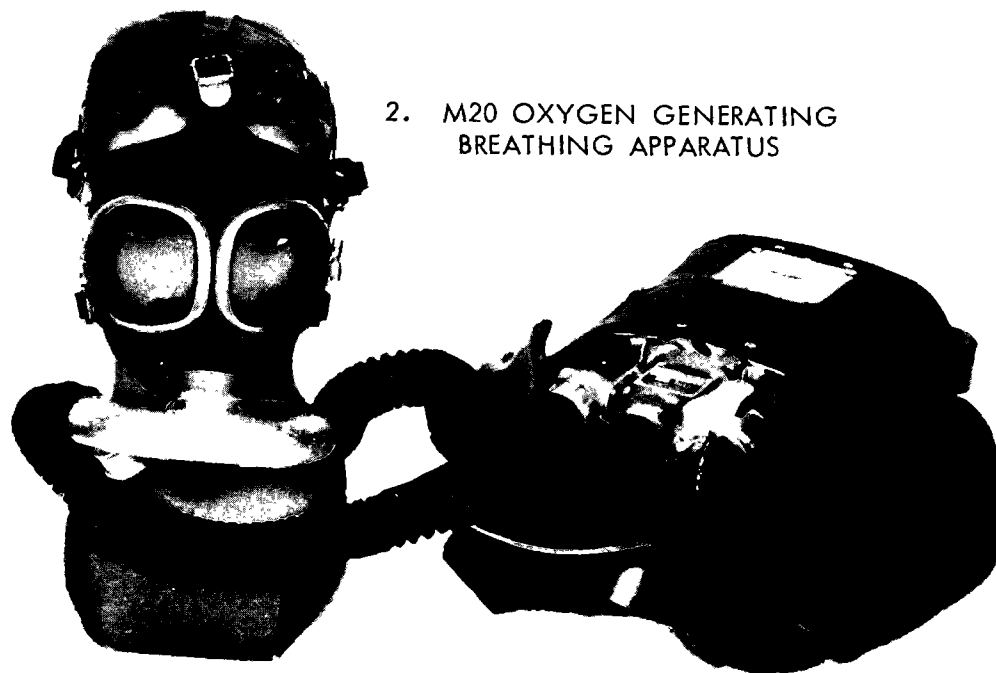
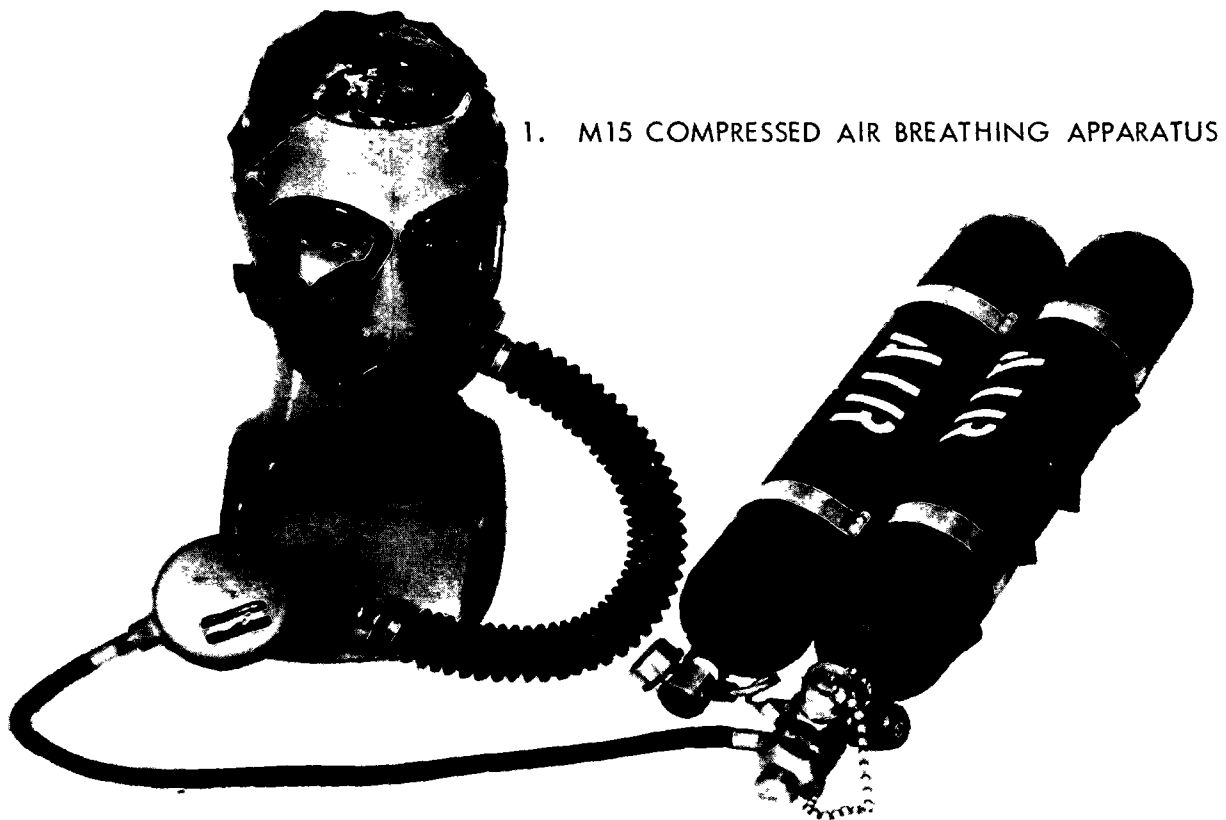


Figure 3-12. Self-contained respiratory protective devices.

many cases, contamination may be limited to the affected convoy vehicle or to the immediate area surrounding the vehicle. However, if gross leakage occurs, spilling agent unnoticed onto the highway, upon inspection of the cargo the team members must assume that leakage has occurred during the entire travel from the last point of inspection. The team must immediately begin coordination with local law enforcement officers, requesting that the affected section of highway be isolated.

b. The team will initiate emergency notification to the nearest military installation, the team's parent unit, and local and state health and law enforcement agencies. The team will initiate and advise on means of determining the extent of contamination, decontamination required, and other safety measures. The team will arrange for decontamination supply support from the nearest military installation.

c. In case of an accident involving ruptured containers, it will be necessary to block all traffic approaching the accident scene to protect all unprotected personnel from exposure to the agent. The names and condition of all persons who are exposed must be recorded, and the record must be furnished the appropriate military medical and administrative authorities.

d. Upon isolation of the leakers, the team will begin decontamination of the area. Other emergency reaction teams reporting to the scene must be briefed and their efforts employed in conjunction with those of the escort team and civil personnel aiding in the emergency. Decontamination will be accomplished for all contaminated items at the accident site. Leakers which cannot be repaired or decontaminated by chemical neutralization will be encapsulated for movement to a disposal area.

3-35. Rail Movement

In the event of a rail accident, the escort team will set up a marker (e.g., engineer tape) around the danger area. Help may be requested from railroad officials and local authorities as necessary. The team will permit only properly identified, authorized personnel to enter the danger area when they are wearing proper protective clothing and equipment. At night, red lanterns or similar warnings, such as railroad fuzes, should be posted around the danger area.

a. If routine inspection shows evidence of a leaker, or if the team is notified of a leaker, the

cargo cars should be thoroughly examined immediately to determine the seriousness of the leak. If the leaker can be repaired and the hazardous material neutralized within a reasonable length of time, the train will continue to its destination as a unit. The affected cars, if on a main line, will be placed on the nearest isolated spur or siding. This transfer will be made only after measures have been taken to prevent further contamination while enroute to the spur.

b. The selection of the spur or siding should be such that the leaking material will not be unduly hazardous to life and property in the vicinity. This should be emphasized to the train crew. If there is any doubt as to safety, the hazard will either be neutralized or brought under safe control prior to the transfer of the car or cars. Delays in train movement should be held to a minimum. After a preliminary estimate of the situation has been made and a guard organized, an emergency command post will be set up outside the hazardous area.

c. If not previously located, the leakers will be located and the seriousness of the leak and the contamination of the car and loading determined. Primary consideration will be the repair of the leaker and decontamination of the car to permit the car with its contents to continue to its destination without a toxic hazard, and decontamination of leakage which may have occurred along the railroad right-of-way. Efforts will be made to eliminate the transfer of cargo from one car to another and to limit the movement of cargo within the car to a minimum when dealing with a leaker or during decontamination.

d. If the leaker can be repaired and necessary decontamination of the car made to insure against a toxic hazard, the car will be decontaminated and routed to its destination. Upon arrival and after unloading, an examination will be made and a certificate of inspection and decontamination completed for each car before release.

e. If the leaker cannot be repaired, it will be removed from the car for further treatment; but if decontamination of the remainder of the car can be completed so as to insure against a toxicological hazard, this should be done and the car, minus the leaker, routed to its destination. An examination will be made after unloading, and a certificate will be completed. If the leak cannot be repaired and contamination of the car is such that the car cannot be decontaminated so it can continue to be used, the contents (after decontam-

ination) minus the leaker should be transferred to another car and routed to the destination.

f. Cars should be changed only as a last resort. Every effort will be made to decontaminate the car so as to permit continued use of the car even though a cleanup job on the cargo may have to be made at the destination as a result of decontamination measures used. The car, after unloading at the destination, will be thoroughly examined and a certificate issued.

g. Where a car is found to be contaminated to the extent that its further use is not deemed advisable, it should be decontaminated, after transfer to cargo, to such extent that it will not present a hazard during normal transit. The car should be placarded with appropriate conspicuous signs reading "DANGER—CONTAMINATED—POISON GAS" and be routed as directed by transportation authorities. Tracks, ties, and other contaminated areas of the right-of-way must also be thoroughly decontaminated.

3-36. Sea Movement

Evidence of contaminated air seeping from any cargo hold is indication of leaking material. A member of the escort team, properly dressed in protective equipment and under surveillance of another equally equipped team member, will go into the contaminated hold and locate the leaker. Repair, sealing, or complete incapsulation of the leaker will be accomplished by the team. The cargo hold will subsequently be decontaminated, using the proper decontaminating solution, with

the approval of the ship's captain. Further action must be approved by the captain. The vessel's captain will be kept informed of the status of the operation. Any waste from the operation must be certified clean prior to the use of normal drain system installed in the vessel. Contaminated waste will be rendered "detoxified" prior to dumping.

a. If the leaking munition or container cannot be repaired to preclude further leakage, the agent will be neutralized, if possible, before its disposal is made at sea. The vessel master is responsible for all final sea dump decisions. All sea dumps must be made in more than 1,000 fathoms of water, a minimum of 10 miles from any shore. The item for disposal must have negative buoyancy (weigh more than 100 pounds per cubic foot). The locations of sea dumps will be reported in addition to time and date. Authority to sea dump hazardous cargo will be spelled out in the operation plans along with the conditions under which the hazardous toxic material can be dumped.

b. If discovered in the loading or off-loading sequence, the leaker will be off-loaded as soon as possible, isolated from all other cargo, and repaired, decontaminated, or disposed of before continuing the load/offload operation for the remaining cargo. After all of the escorted cargo has been unloaded, an inspection will be made of the cargo holds; and, if necessary, decontamination will be accomplished and a decontamination certificate prepared and issued as required.

Section III. REPORTS

3-37. General

During the technical escort mission, the escort team leader or designated representative will submit reports to the parent organization to inform and advise all en route support organizations and the CONUSA movement monitor of progress made en route, need for revisions or changes to emergency support, and requirements for all route contingencies. Since the home organization has more flexibility than the team, it can inform other necessary agencies of progress or emergencies as required. The reports may be augmented by the escort team leader, or designated representative, to convey other pertinent information to the parent organization, and to request information and guidance required to complete the assigned mission. Normally, vessel or aircraft

position reports will suffice for the daily reporting requirements for sea and air transportation modes. However, when the cargo is being moved by rail or road, the escort team leader or designated representative will make a periodic status report via telephone or teletype, giving the location of the cargo and the time of the report.

3-38. Route Deviation Report

This report is submitted for approval whenever natural conditions, disasters, or manmade disturbances generate a need for route deviation. The team leader will research possible local routes by-passing the affected area and making recommendations to parent organizations when assigned primary and alternate routes will not permit passage. This will allow for realignment of emer-

gency support to fulfill needs or contingencies along the alternate or newly chosen route.

3-39. Daily Progression Report

This report is submitted daily to advise the parent command and CONUSA movement monitor of the location of the cargo and all problems that require command attention, support, or action. When a daily progression report for road or rail movement is not received by the required deadline, the parent escort activity may initiate tracer action on the escort team and cargo by contacting the railroad district engineer (for rail movement) or state police (for road movement). This report should consist of date and time initiated, and location and status of the team/cargo.

3-40. Cargo Acceptance Report

This report is submitted, when applicable, to the parent technical escort organization upon completion of the cargo inspection and certification that the cargo is acceptable for safe movement. The report can be made by telephone or teletype. It will include but it is not limited to information as to the expected time and date of departure and conditions of cargo. Problems that preclude acceptance of the cargo will be reported to the parent organization for resolution before the cargo is accepted.

3-41. Emergency Action Report

The escort team leader or designated representative after accomplishing initial emergency actions will report by telephone or teletype to the most accessible contact point on his movement plan or amended version of the plan which com-

pensates for route deviations. The Army area commander (CONUSA movement monitor) will be contacted when assistance is required for such things as contamination control and decontamination control and decontamination. The team leader will request that designated activities be provided the following information:

- a. Team designator code.
- b. Name and rank of person making the report.
- c. Location and date/time of incident/accident.
- d. Scientific name of code designation of material involved.
- e. Quantity of material involved in the incident/accident.
- f. Description of the incident/accident and cause.
- g. Cause of incident/accident, if known.
- h. Actions taken to confine the material and prevent further exposure or contamination.
- i. List of additional equipment, supplies, and quantity of skilled personnel required to eliminate the emergency.
- j. Number of personnel exposed, injured, or killed.
- k. Other pertinent information.

3-42. After-Action Report

This report, when required, may consist of a summary of events which occurred during the escort mission. Format and specific contents are normally established by the parent organization.



CHAPTER 4

TRANSPORTATION OF CHEMICAL/BIOLOGICAL/ETIOLOGICAL MATERIALS (STANAG 3571)

Section I. REGULATORY AGENCIES

4-1. Controls

By their very nature, materials requiring technical escort must have stringent controls to insure that they present the minimum possible hazard to the personnel who handle them and the populace among whom they travel. Shipments of hazardous material must conform to all of the military, Federal, state, and municipal ordinances governing their movement. When transporting hazardous material in a foreign country, the regulations of the host nation will be observed. When a conflict between regulations exists, the order of precedence given in *a* through *d* will be observed. Whenever some regulations are more stringent than, but not in conflict with, the regulations taking precedence, the more stringent requirements shall be observed to the maximum. Regulations governing shipments in order of applicability normally adhere to the following sequence.

- a. Shipments Within a Post/Station/Base.*
 - (1) DOD regulations.
 - (2) Service regulations.
 - (3) Post/station/base regulations.
- b. Shipments Within a Municipality.*
 - (1) Municipal regulations.
 - (2) DOD regulations.
 - (3) Service regulations.
- c. Intrastate Shipments.*
 - (1) State laws and regulations.
 - (2) County and/or municipal regulations.
 - (3) DOD regulations.
 - (4) Service regulations.
- d. Interstate Shipments.*
 - (1) DOT regulations.
 - (2) State laws and regulations.
 - (3) County and/or municipal regulations.

- (4) DOD regulations.
- (5) Service regulations.

4-2. Agencies

For technical escort personnel to become familiar with the regulations governing the shipments they escort, the regulatory agencies must be thoroughly understood. Each regulatory agency writes regulations governing the safe handling and transportation of explosives and other dangerous articles (E&ODA) within its jurisdiction.

4-3. State/Municipal Agencies

Each state, county, and municipality writes laws and regulations covering the transportation of E&ODA through its jurisdiction. Normally, these laws and regulations conform with the Code of Federal Regulations (CFR) to facilitate interstate shipments. However, technical escort personnel should be aware of all pertinent regulations covering their escort mission, especially intrastate shipments. It is beyond the scope of this manual to cover the complexities of the regulations of all 50 states and their counties.

4-4. US Government Agencies

a. Department of Transportation (DOT).

(1) *Regulations.* Section 834, Title 18 of the United States Code of Federal Regulations (Public Law 86-710, 86th Congress, as amended) directs DOT to formulate the rules and regulations governing the safe transportation of E&ODA by all modes of transportation (para 4-7b(3).) These regulations are published under different chapters of the title of the Code of Federal Regulations, as given in (a) through (e) below. The regulations are published in revised form annually on 1 January by the Superintendent of Documents, Government Printing Office, Washington, DC. Daily changes are published in the Federal Register.

- (a) Title 10—Atomic Energy.
- (b) Title 14—Aeronautics and Space—Part 103.
- (c) Title 42—Public Health—Part 72. (This provides the basic criteria for shipment of etioloical materials (table 4-1).)
- (d) Title 46—Shipping—Parts 146 and 147.
- (e) Title 49—Transportation—Parts 1-190.
- (f) Title 33—Post Security—Part 6 and Parts 123 through 126.

Note. These are cited throughout this manual as, for example, 49 CFR 1:1.

Table 4-1. *Etiological Materials*

Anthrax	Q Fever (Queensland Fever)
Botulism	Rabies
Brucellosis	Relapsing Fever
Cholera	Rickettsial Pox
Colorado Tick Fever	Rift Valley Fever
Coxsackie Diseases	Rocky Mountain Spotted Fever
Diphtheria	Schistosomiasis
Encephalitis (Arthropod Borne)	Scrub Typhus
Glanders	Smallpox
Leptospirosis	Tetanus
Lymphocytic Choriomeningitis	Tuberculosis
Melioidosis	Tularemia
Meningococcal Meningitis	Typhoid Fever
Paratyphoid Fever	Typhus Fever
Plague	Yellow Fever
Poliomyelitis	

(2) *DOT operating agencies.* (For further information see paragraph 5-3.)

(a) *US Coast Guard (USCG).* Functions of the Coast Guard include—

1. Saving life and property.
2. Assisting marine commerce.
3. Enforcing maritime law, including shipments under (DOT) CG 108 and 46 CFR: 146-149.
4. Maintaining navigation aids.
5. Promoting water safety.

(b) *Federal Aviation Administration (FAA).* This administration is responsible for—

1. Operating air traffic control and navigation systems.
2. Certifying airmen, aircraft, and aviation schools.
3. Promoting and developing civil aeronautics.

(c) *Federal Highway Administration (FHA).* This administration is responsible for—

1. Regulating motor carrier transportation of E&ODA.

2. Determining safety requirements for operation and equipment of motor carriers.

3. Establishing employee qualification and service requirements.

4. Investigating motor vehicle size and weight and employee service.

5. Administering motor carrier safety.

(d) *Federal Railroad Administration (FRA).* Basically, this administration is responsible for—

1. Regulating rail transportation of E&ODA.

2. Determining safety equipment on railroad engines and cars.

3. Administering rail carrier safety.

b. *Other Federal Regulatory Agencies.* In addition to DOT, several other Federal agencies contribute to the regulations governing the transportation of E&ODA. Some of these agencies and their duties are—

(1) *Interstate Commerce Commission (ICC).* This commission regulates the economic and service aspects of performance of rail and motor carriers.

Note. On 1 April 1967 the function and regulations of the Interstate Commerce Commission concerned with the safety aspects of transportation of E&ODA were transferred from ICC to DOT.

(2) *Civil Aeronautics Board (CAB).* This board regulates the economic and service aspects of domestic air carriers and US flag carriers on an international basis.

(3) *Federal Maritime Commission (FMC).* This commission regulates the economic aspects of performance of domestic and international water carriers serving the United States.

c. *Bureau of Explosives (BofE).* This is a private body of the Association of American Railroads (AAR) that provides the following services:

- (1) Inspections.
- (2) Hazard classification.
- (3) Packaging methods.
- (4) Loading methods.

BofE has delegated authority from DOT; it has no regulatory ability.

4-5. Service Agencies

In addition to the state, local, and Federal regulations governing shipment of E&ODA, each service writes safety and control, handling, and storage regulations for use within the particular service. Technical escort personnel should be aware

of these differences, especially on interservice shipments. Some of the service agencies and regulations that are particularly relevant to technical escort are given below.

a. Military Traffic Management and Terminal Service (MTMTS). MTMTS—

(1) Acts as liaison between DOD and DOT and other civil highway authorities on all regulatory matters pertaining to military shipments.

(2) Is responsible for routing specified shipments via surface and military airlift.

(3) Arranges for guard car for rail escort mission.

b. Armed Services Explosives Safety Board

(ASESBD). This board determines policy and procedures on E&ODA safety for military services, worldwide.

c. Army. Within the Army, the Army Materiel Command (AMC) regulations govern the safe transportation of E&ODA.

d. Navy. Within the Navy, Naval Ordnance Systems Command regulations govern the safe transportation of E&ODA.

e. Air Force. The Air Force 11-series technical orders and Air Force manuals (e.g., AFM 127-100, Explosives Safety Manual) provide guidance for the safe transportation of E&ODA.

Section II. REGULATIONS

4-6. General

As previously discussed (para 4-3), the regulations governing transportation of hazardous material are published under different titles of the CFR. To facilitate the use of these complex regulations, tariffs are published for various modes of transportation. These tariffs for transportation modes and a few guidelines for their use will be discussed.

4-7. Rail Transportation

a. General. Agent T. C. George's¹ Tariff No. 23 contains the hazardous materials regulations of DOT as set forth in 49 CFR, Parts 171-179. It actually encompasses all surface modes of transportation and, as such, is probably more widely used than other transportation mode tariffs. In addition to his duties as a tariff publishing agent, Mr. George is also the Chief Inspector of the Bureau of Explosives.

b. Explanation. A brief explanation of the different parts of Tariff No. 23 is given below.

(1) *List of participating carriers.* These carriers are on record as participants in Tariff No. 23 for whom T. C. George provides representation.

(2) *Restrictions.* These are self-imposed limitations of the carriers and their facilities. Carriers are required by paragraph 174.575(b) of the CFR to report to BofE for publication within this tariff any restrictions imposed

against the acceptance, delivery, or transportation of hazardous material over their lines.

(3) *Public Law 86-710, 86th Congress.* This defines the laws (18 CFR, chapter 39) and punishments for violations, and establishes the authority to regulate and administer the rules for the safe transport of hazardous material within the United States.

(4) *Part 171.*

(a) When DOT assumed the functions and powers of the ICC pertaining to the safe transport of E&ODA (para 4-4b(1)) the newly established department reserved the first 100 numbered parts of 49 CFR for administrative rules pertaining to the department. Each part of 49 CFR was numbered by increasing each part by 100.

(b) This part offers general information and regulations such as how the numbering and lettering (171.8(d)) system is used. An index precedes this and all other parts. The index is broken down into sections, "a major subdivision of a part."

(5) *Part 172.* This part contains the commodity list and, in sections 172.1 through 172.4, an explanation of the terms used in the list. Section 172.5 is an alphabetical listing of all articles subject to Parts 171 through 179 of 49 CFR. You will note in 172.2, however, that dangerous articles not listed must still be shipped in accordance with the regulations for the appropriate hazard classification. In addition to the alphabetical listing of each article, the hazard classification, exemptions and packing, label required, and maximum net quantities allowable per outside

¹ Agent T. C. George retired from AAR 31 October 1970. R. M. Graziano succeeded him, and it is anticipated that in the near future the tariff will carry Graziano's name.

container by Railway Express are listed in the chart. Section 172.5 is one of the main areas with which technical personnel should become familiar. Care should be taken to read the chart carefully, especially the abbreviations, signs, and footnotes.

(6) *Part 173.* This part contains the regulations applying to shippers. Of particular interest to technical escort personnel are subparts B, G, H, and I. Since these subparts apply to land and water modes of transportation, close inspection of their contents will be included here.

(a) *Subpart B—explosives; definitions and preparation.*

1. It should be noted that explosives are shipped according to their hazard and, as such, are classified in a different manner than military classification. Technical escort personnel should become familiar with these differences. Section 173.52 gives the following brief definition of explosive classes.

(a) Class A explosives: Detonating or otherwise of maximum hazard.

(b) Class B explosives: Flammable hazard.

(c) Class C explosives: Minimum hazard.

2. A detailed definition of each explosive class is contained in the section indicated below.

(a) Class A explosives: 173.53—173.87.

(b) Class B explosives: 173.88—173.95.

(c) Class C explosives: 173.100—173.114.

(b) *Subpart G—poisonous materials; definition and preparation.*

1. Poisonous materials are, like explosives, classified according to their degree of hazard in transportation. Section 173.325 gives the following brief description of the various classes:

(a) Class A—Extremely dangerous poison.

(b) Class B—Less dangerous poison.

(c) Class C—Tear gas or irritating substances.

Note. Radioactive materials are discussed in chapter 5 of this manual.

2. A detailed definition of the classes is contained in the sections indicated.

(a) *Class A poison: 173-326—173.338.* It should be noted that no mention of nerve agents is made in this tariff. However, by

definition, Class A poisons are those which in “a very small amount . . . mixed with air is dangerous to life”; certainly this includes nerve agents. Section 172.5 gives the proper shipping name of such articles as “poisonous liquid or gas, n.o.s.” and classes it as Class A poison.

(b) *Class B poison: 173.348—173.379.* Those poisons (other than Class A or C) which are known to be so toxic to man as to afford a health hazard during transportation. Agent BZ falls within this category.

(c) *Class C poison: 173.381—173.385.* Those poisons that, when exposed to air or upon contact with fire, give off dangerous or intensely irritating fumes.

(c) *Subpart H—marking and labeling of hazardous material.*

1. Sections 173.402 through 173.404 require that all hazardous material be labeled by the shipper, and lists the required labels, their colors and dimensions. Sections 173.405 through 173.414 offer examples of each type of label. Section 173.409 indicates that poisonous articles labels but does not indicate which are involved without the reader's referring to 172.5. The poison classes and their corresponding labels, as follows, are illustrated in figure 4-1:

(a) Class A poison—173.409(a)(1), poison gas label.

(b) Class B poison—173.409(a)(2), poison label.

(c) Class C poison—173.409(a)(3), tear gas label (not illustrated).

2. It should be noted that the above labels are for land shipments only. Shipments by air must carry the label indicated in 173.409(b), “Poison,” for all three classes of poisons. (Reference Joint Service Manual AFM 71-4 and Tariff No. 6D. These references are discussed in paragraphs 74b and 75c, respectively.)

3. Shipments made within the DOD that are accompanied by technical escort personnel are exempt from labeling requirements, according to paragraph 173.400(d)(1).

Note. Radioactive materials labels are discussed in section II, chapter 5 of this manual.

(d) *Subpart I—shipping instructions.* Section 173.427 requires the shipper to include in the shipping papers, bill of lading, or shipping orders descriptions of the articles being shipped. This information, which is important to technical escort personnel, includes—

1. Proper shipping name.

2. Classification.

3. Total quantity (weight, volume).

4. Type of label applied or the statement "no label required," if exempt.

5. A signed certificate, which must be applied to the lower left hand of the shipping papers (fig 2-1).

(7) *Part 174*. This part contains the regulations applying particularly to carriers by rail freight. Important sections of this part will be discussed in detail; numerical sequence will be disregarded.

(a) *Certified cars—174.525*.

1. Shipments of Class A explosives can be made only in "certified" cars. This section defines the criteria for a certified car and stipulates that a copy of the certificate must be filled in and attached to the car (fig 4-2).

2. Part 2 of the above certificate is signed by whoever loads the car, normally the shipper. In case of a classified shipment, only the shipper is authorized entry into a loaded car, in accordance with DOT Special Permit No. 868.

(b) *Poison gas, Class A—paragraph 174.532(1)*. Subparagraph (5) requires that "gas handlers" with equipment to handle leaks and other container failure will remain with the equipment during the entire time it is in custody of the carrier. The "gas handler" is, of course, technical escort personnel.

(c) *Subpart B—loading and storage chart (app D)*. This chart offers a simple reference to the compatibility of hazardous material. An X intersecting the horizontal and vertical columns indicates that the items are too hazardous to be loaded, transported, or stored together. Special attention should be paid to the footnotes when using the chart.

(d) *Subpart C—placards on cars*. This subpart contains information on which placards, and their shape and size, must be used for hazardous material. For technical escort use only, the following normally apply:

1. Explosives placard—174.550—is used for explosive Class A.

2. Dangerous placard—174.552—is used for explosive Class B and biological agents.

3. Poison gas placard—174.551—is used for Class A poison. This placard must be applied in addition to any others required.

4. Section 174.541 required Class B poisons to be placarded "DANGEROUS."

5. Sections 174.562 and 174.563 offer information on placards that may be required if a

dangerous or poisonous residue remains after unloading the shipment.

(e) *Subpart E—handling by carriers by rail freight*. This subpart describes the handling procedures that must be followed by the carrier. The following sections contain a few of the major considerations.

1. Section 174.584 has a chart of the required notations on the shipping papers.

2. Section 174.586 offers general and specific safety regulations for handling hazardous material.

3. Section 174.589 lists all the handling considerations for cars loaded with hazardous material. Some of these are—

(a) Placards (fig 4-3) and car certificates shall be inspected and replaced as necessary.

(b) No car containing hazardous material will be cut off while in motion (para 19d). "DO NOT HUMP" placards are sometimes placed on such cars.

(c) Cars containing hazardous materials shall be placed in yards and sidings in a safe area.

(d) Placement of cars containing hazardous material is covered in detail in this section.

4. Section 174.590 requires that a record of change of seals on sealed cars be made and maintained.

(8) *Part 175*. These regulations apply to rail express shipments only. Since the commodities that technical escort personnel are normally concerned with are not carried by rail express, this part will not be covered in this manual.

(9) *Part 176*. These regulations pertain to baggage service aboard passenger-carrying trains. Hazardous material of a technical escort nature is not acceptable for shipment in this type of service.

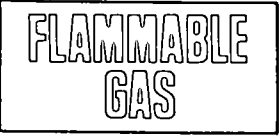
(10) *Part 177*. This part pertains to the regulations applying to shipments made by carriers on public highways. Most of the general regulations covered so far are applicable to highway transportation. However, there are some notable differences.

(a) *Label requirements*. The label requirements remain the same; also the exemption for technical escort.

(b) *Certificate—177.819*. A carrier is not allowed to accept a shipment of hazardous material unless he receives a signed certification from the shipper similar to the following: "This is to

TRUCK PLACARD CHART / Placarding Instructions to Comply With Department of Transportation Regulations

1. Placard four sides of vehicle. Front placard may be on cab or cargo body.
2. Placard at least three inches from other markings, lettering or graphic displays, except: when required, two different placards should be next to each other.
3. On combinations of vehicles containing explosives or other dangerous articles, placard each vehicle as to its contents as illustrated by the chart below.
4. Remove placards when dangerous articles are removed from vehicle.
5. Dangerous shipments can be identified by: Labels on packages, markings, type of packages, shipper or shipping name. Check with terminal if there is any question about shipment or placarding.
6. No placarding required for Class "C" Explosives or Class "C" Poison (Tear Gas).

Label No.			Label No.
1	  Placard 1,000 pounds or more gross weight, Flammable Compressed Gas.	   Placard 1,000 pounds or more, gross weight: Flammable Solids, Flammable Liquids, or combination of both. <u>Note:</u> Yellow label is also used on Oxidizing Materials. Check shipping papers for identification of contents for proper placarding.	7
2	  Placard 1,000 pounds or more gross weight, Non-Flammable Compressed Gas.	   Placard any quantity of Poison Class "A" or a combination of Poison Class "A" and "B". Placard 1,000 pounds or more gross weight of Poison Class "B". For mixed loads, see DANGEROUS. Class "A" Class "B"	8
3	   Placard 1,000 pounds or more gross weight, Corrosives.	 No placard required for material bearing "radioactive — white I" or "radio active yellow II" labels. Placard any quantity of shipments bearing radioactive yellow III label.    For mixed loads, see DANGEROUS.	9
4	  Placard 1,000 lbs. or more gross weight, Oxidizers. Yellow label is also used on Flammable Solids. Check shipping papers to identify contents for proper placarding.	 Use when specified on shipping papers or when appropriate.	10
5	 Placard any quantity of Explosives "A". For mixed loads, see DANGEROUS.	 When commodities requiring different placards are loaded on the same unit and have a combined gross weight of 1,000 pounds or more, use Dangerous placard.	11
6	 Placard any quantity of Explosives "B". If mixed with Explosives "A", use EXPLOSIVES "A" placard. For mixed loads, see DANGEROUS.	Double placarding: When loads requiring Dangerous placard include any of the following, use the appropriate placard with the Dangerous placard: Explosives "A"; Explosives "B"; Poison "A"; Radioactive (requiring radioactive yellow III label as shown above). Form C1060, Re-Order from American Trucking Assns., Inc., 1616 P Street, N. W. Washington, D. C. 20036	

Printed by permission of American Trucking Associations Inc.

Figure 4-1. Truck placarding chart.

Label No.

- 1 (1) Red lettering—white background.
(2) Black lettering—red background.
- 2 (1) Green lettering—white background.
(2) Black lettering—green background.
- 3 (1) Blue lettering—white background.
(2), (3), (4)—Black lettering—white background.
- 4 (1) Yellow lettering—black background.
(2) Black lettering—yellow background.
- 5 Red lettering—white background.
- 6 Red lettering—white background.
- 7 (1) Red lettering—white background.
(2) Black lettering—red background.
(3) Black lettering—yellow background.
- 8 (1) Blue lettering—white background.
(2), (3)—Red lettering—white background.
- 9 (1) Black lettering—yellow background.
(2) Top—Black markings, yellow background.
Bottom—Black lettering, red markings, white background.
(3) Top—Black markings, white background.
Bottom—Black lettering, red marking, white background.
(4) Top—Black markings, yellow background.
Bottom—Black lettering, red markings, white background.
- 10 Black lettering—white background.
- 11 Red lettering—white background.

Figure 4-1—Continued.

CAR CERTIFICATE	
No. 1.....	Station....., 19....
I hereby certify that I have this day personally examined Car No..... and that, as applicable to the type of car, there are no holes or other openings in the roof, sides, ends or car lining, through which sparks might enter; that the floor is clean and in good condition and it and the car lining are free of projecting uncovered pieces of metal or nails; that I have examined all the journal boxes and that they are properly covered, packed and oiled and that the air brakes and hand brakes are in condition for service.	
..... Railway employee inspecting car	
SAMPLE	
No. 2.....	Station....., 19....
I have this day personally examined the above car and hereby certify that the explosives in or on this car; or in or on vehicles or in containers; have been loaded and braced, and that placards have been applied, according to the regulations prescribed by the Department of Transportation; that the doors of cars so equipped fit or have been stripped so that sparks cannot enter.	
..... Shipper or his authorized agent.	
..... Railway employee inspecting bracing.	
NOTE 1: A shipper must decline to use a car not in proper condition.	
No. 3.....	Station....., 19....
I hereby certify that I have this day personally supervised the loading of the vehicles or containers on and their securement to the above car.	
..... Shipper or railway employee inspecting loading and securement.	
NOTE 1: All certificates, where applicable, must be signed.	

Figure 4-2. Railroad car certificate.



(top label) white card
red and black print

(middle label) white card
red and black print

(bottom label) white card
red print



Figure 4-3. Placards for rail freight.

certify that the above named articles are properly described, classified, packaged, marked, and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation."

1. Class A explosives—EXPLOSIVES A
Red letters on white background
2. Class B explosives—EXPLOSIVES B
Red letters on white background
3. Class A poison—POISON
Blue letters on white background
4. Radioactive material—RADIOACTIVE
Black letters on yellow background
5. Mixed loadings—DANGEROUS
Red letters on white background

Note. The DANGEROUS placard should denote a mixed lading, the aggregate gross weight of which exceeds 1,000 pounds. This placard is in addition to 1, 2, 3, and 4.

(d) *Subpart B—loading and unloading.* Sections 177.834 through 177.841 give general and detailed safety requirements and regulations governing the loading and unloading of hazardous material.

(e) *Subpart C—loading and storage chart.* This chart is similar to the compatibility chart listed for rail movements (app D) with the exception that the terms "truck/truck load" are interchanged for "car/car load." An X indicates that the items are not to be loaded, stored, or transported together.

(f) *Section 177.860.* This section contains the regulations to be used in case of an accident involving poisons. Some of the requirements are—

1. Every available means shall be employed in the protection of persons and property, or in the removal of wreckage, in the vicinity.
2. Such means shall also be employed to safeguard against the aggravation of the hazard present and to warn other users of the highway.
3. Care should be taken to prevent any poison from flowing or being poured into any stream or sewer or being scattered by the wind.

(11) *Part 178—shipping container specifications.* This part includes the exact specifications for all containers of hazardous material for which specification containers are required. (Recall that commodities listed in section 172.5 have packaging requirements referenced to sections in part 173. The sections in Part 173 specify quantity limitations per package, types of containers authorized, and the DOT specification required

(c) *Placarding—177.823.* The following placards shall be applied to the front, rear, and each side of the vehicle in letters not less than four inches high. (The wording of this section allows for larger letters and reflectorized placards, and most services require larger signs.)

for construction of the containers. These specifications are set forth in Part 178.)

Note. Shipments by or to the Army, Navy, Air Force, or Atomic Energy Commission must be packed in containers clearly identified as complying with the specifications (for example, DOT 15B125 denotes a wooden box conforming to specifications 15B with an authorized gross weight of 125 pounds); or as authorized by section 173.7, in containers of equal or greater strength and efficiency as determined by their regulations. Almost invariably, the military services have designed, tested, and approved specific container designs for items or materials requiring technical escort. Such containers need not be marked with the corresponding DOT specification number, but the use of such specific-design containers is fully documented in the drawings or specifications for the specific item or material contained. It is the responsibility of the shipper to insure compliance with the military specifications and drawings or the detailed DOT specifications, and he must complete the certification on the bill of lading that he has done so.

(12) *Part 179—specifications for tank cars.* Military poisons are not normally shipped in tank cars; however, Subpart E, Specifications of multiunit tank cars, contains the specifications for one-ton containers.

(13) *Part 397—transportation of E&ODA by motor vehicle.* This part contains the applicability and orders compliance to motor vehicle carriers when hauling E&ODA. It also lists general driving rules.

4-8. Highway Transportation

a. The American Trucking Associations, Inc., Dangerous Articles Tariff 14 is the current publication governing E&ODA by highway transportation. It restates the parts of the CFR that are applicable to motor carriers (Parts 171 through 173, 177 through 179, and 390 through 397). In addition to the American Trucking Associations

Tariff 14, the association also publishes other publications for the use of its carriers, such as "Dangerous Article Handling," a pamphlet containing general safety rules and diagrams of proper placarding and safety equipment; color charts of placards and labels are included. The chart (fig 4-1) can be purchased from the American Trucking Associations, Inc., 1616 P Street N.W., Washington, DC 20036.

b. The Federal Highway Administration of DOT publishes a small pamphlet, "Motor Carrier Safety Regulations," that can be purchased from the Government Printing Office, Washington, DC. It contains the safety regulations of 49 CFR (Parts 290 through 297) and a subject index that provides quick reference to all parts of the pamphlet.

4-9. Air Transportation

Carrying E&ODA by any means of transportation embraces certain inherent risks. However, the risks involved in transporting E&ODA by aircraft are considered much greater due to the temperature, vibrations, takeoffs, landings, and inability to stop immediately and correct emergency situations. It can generally be said that Class A explosives and poisons cannot be carried by aircraft except with special authority. Air transportation will be discussed from the viewpoint of the two regulating authorities, military and civil.

4-10. Military Air Transportation

Joint service manual AFM 71-4 is the authority for shipment by military air. It is primarily a shipper's manual. Air Force terminals and aerial ports are extremely conscious of the hazards involved with transporting E&ODA and consequently strive for quality control of their shipments to afford the maximum amount of safety possible to their aircraft and crews. This manual is closely followed, and any discrepancies have to be corrected prior to flight. Because of the extreme importance of AFM 71-4, a brief description of each chapter is given below. (The page numbering system indicates the chapter, then page, i.e., chapter 1, page 2.)

a. *Chapter 1.* This chapter offers an explanation of the terms, rules, and regulations used in this manual. Of special interest are the following:

(1) *Items preceded by a single dagger (†).* These are items whose physical and chemical

properties are considered such as to present definite hazards even under normal shipping conditions; and, therefore, shipment by air is permitted only according to paragraph 1-1w (operational necessity) and 1-6 (authority for shipment under operational necessity).

(a) Operational necessity exists when the use of any mode of transportation other than air will delay the receipt of the material, thereby impairing the command's mission or jeopardizing the health and welfare of personnel. In general, the authority to approve this priority is vested in the division wing commander or higher authority.

(b) In addition to operational necessity, the request must contain a statement to the effect that all packaging and handling requirements have been met.

(2) *Items preceded by a double dagger (††).* These are items whose properties are considered sufficiently dangerous as to present such a minimum safety factor that this would preclude their shipment by air. Items so identified will not be offered for shipment by military aircraft under any circumstances. Chapter 1 also contains provisions applying to all shipments of Class A poisons and biological or etiological materials. It provides the data for obtaining clearances for the material involved, the shipper's responsibilities, and, of particular note here, the technical escort's responsibilities. Technical escort personnel should make themselves thoroughly aware of the contents of paragraph 1-13e AFM 71-4.

b. *Chapter 2.* This chapter contains the operational procedures for aircraft containing E&ODA. Radio procedures, placarding, and loading and unloading procedures are covered. Of special importance to technical escort personnel are the inspection criteria in paragraph 2-7 and the placarding chart in table 2. The placards required for aircraft are the same as those required for highway transportation. The placards are not normally attached to the aircraft but are placed around the aircraft on stands to warn of the hazard. If placards are placed on the aircraft, they must be removed prior to flight. The following placards apply to technical escort missions particularly.

- (1) Class A explosives—EXPLOSIVES A.
- (2) Class B explosives—EXPLOSIVES B.
- (3) Class A poisons—POISON.
- (4) Radioactive materials (RAM)—RADIOACTIVE.

(5) Etiological/biological materials—DANGEROUS.

(6) Mixed loadings—DANGEROUS.

c. Chapter 3. This chapter offers a general discussion of the transportation of dangerous materials by air. For a review of the difference between air and surface transportation, refer to this chapter.

d. Chapter 4.

(1) The alphabetical listing of items in this chapter generally conforms to the commodity list of Agent T. C. George's Tariff No. 23. It lists the article, the DOT hazard classification, and label required; and gives a paragraph reference to proper packaging, storage, and handling.

(2) Of particular significance to technical escort personnel are the symbols used to precede an item. A single dagger (†) and double dagger (††) were explained in paragraph *a*(1) and (2) above. The asterisk (*) denotes that an item may or may not be dangerous and that particular attention should be given to the item. The asterisk should attract attention and cause a determination to be made as to whether or not the item is dangerous. If it is concluded that such an item is not dangerous, a statement to that effect should be included in the shipping documents to establish that the item has been checked and may be transported as general cargo.

(3) Unlike Agent T. C. George's Tariff No. 23, the alphabetical listing of this manual includes references to nerve agents. They are listed under their German names with the chemical symbol and name following, i.e.:

(a) Sarin (GB), Methylisopropoxyfluorophosphine oxide.

(b) Soman (GD), Methylpinacoloxyluorophosphine oxide.

(c) Tabun (GA), Dimethylaminothoxycyano-phosphine oxide.

(4) Biological/etiological materials are also listed alphabetically under the general terms of—

(a) Biological agents.

(b) Etiological agents.

e. Chapters 5 Through 11.

(1) These chapters are the references for packaging, storage, and handling requirements of the alphabetical listing. Each contains a general information section and then detailed information on each article listed in chapter 4. The following information is included:

(a) Properties. (Hazards involved are explained.)

(b) Storage and handling data.

(c) Packaging methods.

(d) Marking and labeling instructions.

(2) Chapters 5 through 11 are divided into seven major hazard classes:

(a) Chapter 5—explosives and ammunition.

(b) Chapter 6—flammable liquids.

(c) Chapter 7—flammable solids and oxidizing materials.

(d) Chapter 8—corrosive liquids.

(e) Chapter 9—compressed gases.

(f) Chapter 10—poisons.

(g) Chapter 11—articles not otherwise regulated (NOR).

f. Chapter 12. Marking and labeling instructions for all dangerous articles to be transported by military air are in this chapter. The labeling requirements are those required by DOT for air shipments except that two labels must be applied to each package. All classes of poisons shipped by air require the Poison Gas—Poison Label (DA 67).

g. Attachments. There are several attachments at the end of this manual that should be of assistance to technical escort personnel.

(1) Attachment 1 is the loading and storage compatibility chart. It is used in the same manner as the compatibility charts in Parts 174 and 177 of 49 CFR. Again, care should be taken to observe all footnotes.

(2) Attachment 3 lists each article alphabetically and places it in a commodity group.

(3) Attachment 4 groups these items collectively in firefighting hazards and assigns safe distances to each group.

(4) Attachment 5 gives instructions for completing DD Form 836-1, Briefing for Aircraft Commanders Transporting Explosives or Other Dangerous Articles (illustrated in app G). The information from attachment 4 is in this form.

Note. DD Form 836-1 is no longer required to be executed by shippers for military aircraft.

(5) Attachment 6 contains a chart on neutralizing agents and instructions for neutralizing spills of corrosive material aboard an aircraft.

4-11. Civil Air Transportation

a. Shipments requiring military technical escort normally preclude the use of civil air trans-

portation. The mere fact that the military charters a civil or carrier aircraft makes it subject to the regulations discussed in paragraph 4-10. In addition, Logistic Air (LOGAIR), Priority Air Dispatch (PAD), and QUICK-TRANS also fall under military rather than civil regulations. However, in event a shipment must be escorted on a civil flight, transportation guidance may be found in The Official Air Transport Restricted Articles Tariff No. 6-D, which is an air-carrier tariff based on 14 CFR, Part 103 (para *c* below).

b. 14 CFR, Aeronautics and Space, contains the regulations pertaining to civil air transportation (para 4-4a(1)(b)). Part 103 of chapter 1 of this title is the authority for transporting dangerous articles and magnetized materials. This part contains all the detailed requirements for the shipper about placarding, labeling, marking, and so forth; and must be followed by everyone engaged in air transport of E&ODA.

c. Airline Tariff Publishers, Inc., publication titled "The Official Air Transport Restricted Articles Tariff No. 6-D" is similar to Agent T. C. George's Tariff No. 23 and American Trucking Associations' Tariff No. 14. It is a restatement of Part 103 of Title 14 of the Code of Federal Regulations issued for the use of participating carriers listed on pages 5 through 8. The tariff is similar to its military counterpart in that it offers an alphabetical listing of each article and then the hazard class, label required, and packaging. It also lists the maximum amount of each item that may be carried aboard passenger-carrying and cargo aircraft. The packaging requirements are given in detail in order to identify them properly, i.e., chemical ammunition may consist of projectiles, bombs, or grenades containing Class A poisons.

4-12. Sea Transportation

a. 46 CFR, Shipping, contains all shipping regulations. Part 146 governs the transportation or storage of explosives or other dangerous articles or substances and combustible liquids on board vessels. Finally, Subpart 146.29 titled "Detailed regulations governing the transportation of military explosives and hazardous munitions on board vessels," covers the regulations pertinent to escorted sea shipments. Subpart 146.29 is extracted from Part 146 and published in (DOT) US Coast Guard manual CG 108, Rules and regulations for military explosives and hazardous munitions (para 4-4a(2)(a)).

b. One of the major safety considerations aboard ship is fire. Since the nature of E&ODA increases the fire hazard, special consideration is given to all explosives and other dangerous articles.

c. The manual is written in a manner similar to the other transportation modes discussed above. A brief review of its major parts and special considerations will be covered here.

(1) *Table of contents.* This table offers a complete description of the contents if studied carefully. The following portions are mentioned as being of particular interest to technical escort personnel.

- (a) Definitions and abbreviations.
- (b) Types of stowage.
- (c) Chemical ammunition stowage.
- (d) Explosives admixture chart (compatibility).
- (e) Classification, handling, and stowage chart.
- (f) Alphabetical listing of all items covered in the manual, in their proper Coast Guard class (app A).

(2) *The compatibility chart—146.29 through 99.* Chart A breaks down the three classes of explosives and three classes of poisons into 28 separate hazard classes. Again, primarily from their fire hazard standpoint, the compatibility chart (A) lists all liquid fuels for missiles in one class and all oxidizers in another; and then chart B indicates which can be sorted together.

(3) *Classification, handling, and stowage chart—146.29 through 100.* This chart begins with Class I and progresses through each class in numerical order. It breaks down each class into the following categories:

- (a) Class.
- (b) Description of all articles included in this class.
- (c) DOT markings required.
- (d) DOT class.
- (e) Hazard involved. (This should be of particular interest to all those involved in a shipment.)
- (f) Stowage, i.e., where the article is authorized to be stowed.
- (g) Handling, i.e., special considerations such as size of drafts, lifts, and boom limits.

Note. Lethal chemical ammunition is in Class XI-A.

CHAPTER 5

TRANSPORTATION OF RADIOACTIVE MATERIALS (STANAG 3571)

Section I. REGULATORY AGENCIES

5-1. General

As of 1 January 1969, the regulations covering transportation of radioactive materials were revised to correspond to the regulations of the International Atomic Energy Agency (IAEA). These modifications were made to Title 49, Code of Federal Regulations and published in the Federal Register, volume 33, number 194, dated October 4, 1968. The title of this publication is Part II, Department of Transportation Hazardous Material Regulations Board: Radioactive Materials and Other Miscellaneous Amendments. Expiration date for all old Bureau of Explosives permits was 28 February 1969. As of this date full compliance with the new regulation is mandatory.

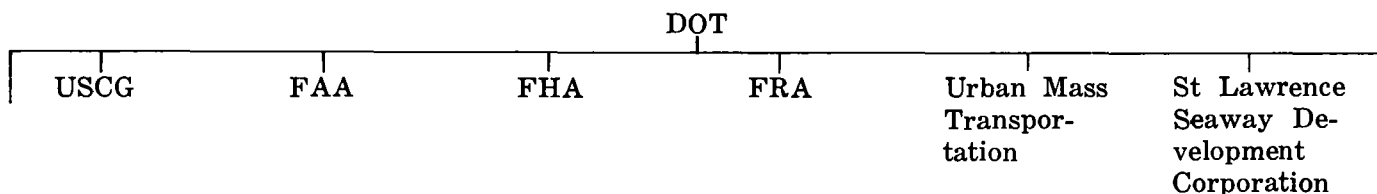
5-2. State and Local Government Requirements

Various state and local governmental agencies have regulations controlling the movement of radioactive materials within their boundaries (para

4-1). However, the state and local governmental regulations are beyond the scope of this manual, since it would require detailed interpretations of each state's requirements; consequently only the Federal laws will be presented. The military services have further amplified these Federal regulations by appropriate restatement of their objectives in applicable service regulatory publications. The service regulatory publications can make the laws more stringent than the Federal requirements but cannot make them less stringent. The Army's regulation on mail shipments of radioactive materials as stated in AR 55-55 is a prime example.

5-3. Federal Regulatory Agencies

a. At the Federal level, DOT regulates the transportation of radioactive materials, moving between states and foreign commerce within the United States by any means of transport—air, land, or water. The agencies which now come under DOT's regulatory control are as follows:



b. The functions of the first four of these agencies are given below. The Coast Guard regulates the handling and storage of radioactive materials aboard ship for water transport. The Federal Aviation Agency regulates the movement of radioactive material by air. The Federal Highway Administration regulates highway movement of radioactive material, and the Federal Railway Administration controls rail shipment. Under the FRA, an agency of the Association of American Railroads has delegated authority from DOT; this agency is the Bureau of Explosives. BofE

previously approved package design and shipping procedures for DOT, but as of 28 February 1969 all BofE permits are invalid except for those recertified by the new DOT regulations. The BofE is still responsible for granting waivers to the regulations; these requests for waivers go through channels to DOT, and the BofE handles them. Paragraph 4-4 also discusses the role of these agencies with regard to E&ODA.

c. Two other separate Federal agencies are also involved in radioactive materials movement.

The US Post Office Department (USPOD) regulates the shipment of these materials through the mails. USPOD is the one agency which did not change its regulations as of 1 January 1969. It permits the shipment of certain small amounts of radioactive materials. The other Federal agency is the Atomic Energy Commission (AEC). The AEC has broad authority under the Atomic Energy Act of 1954 as amended. The AEC is responsible for approving procedures for transport of fissile material and large quantities of radioactive material. DOT is responsible for regulating shipment and/or movement of these items in interstate commerce.

Section II. TRANSPORTING THE MATERIALS

5-4. Radionuclides

a. Groupings. Radioactive materials are divided into seven groups and a special form category according to the radiotoxicity and degree or

d. Further discussion on radioactive materials transportation in this manual will be centered around DOT regulations only. These regulations are also printed in Agent T. C. George's Tariff No. 23 (para 172). Any shipment which exceeds any specifications outlined in section II of this chapter requires a waiver, and any shipment requiring a waiver must be escorted. In addition, escort may be required for the purpose of national security or at any time the shipping installation deems it in the best interest of the Government to escort the material.

Table 5-1. Radioactive Nuclide Group Assignment

Radionuclide	0-1000 days	Half-life 1000 days to 10 ⁴ years	Over 10 ⁴ years
Atomic number 1-81	Group III	Group II	Group III
Atomic number over 82	Group I	Group I	Group III

b. Mixtures. For mixtures of radionuclides the following criteria apply.

(1) If the identity and respective activity of each radionuclide are known, the permissible activity of each radionuclide shall be such that the sum, for all groups present, of the ratio between the total activity for each group to the permissible activity for each group will not be greater than unity.

(2) If the group of radionuclides is known but the amount in each group cannot be reasonably determined, the mixture shall be assigned to the most restrictive group present.

(3) If the identity of all or some of the radionuclides cannot be reasonably determined, each of those unidentified radionuclides shall be considered as belonging to the most restrictive group which cannot be positively excluded.

(4) Mixtures consisting of a simple radionuclide decay chain shall be considered as consisting of a single radionuclide. The group and activity shall be that of the first member present in the chain, except if a radionuclide "X" has a half-life longer than that of the first member and

hazard during transport. The listing of radioactive nuclides is in appendix N. Any radionuclide not included in this appendix must be assigned to one of the groups in accordance with the information in table 5-1.

an activity greater than that of any other member during transportation.

5-5. Packages and Packaging Requirements

a. Categories. In the transportation of radioactive materials, the packages required are divided into two categories: Type A and Type B. Type A packaging must be adequate to prevent the loss or disposal of the radioactive contents and to retain the efficiency of its radiation shielding properties if the package is subject to the tests prescribed in 49 CFR 173.393, 173.394, 173.395, 173.398, and in 173.23, 173.24, and 173.28. Type B packaging must meet the standards for Type A packaging and, in addition, meet the standards for hypothetical accident conditions for transportation as outlined in 49 CFR 173.393, 173.394, 173.395, 173.398, 173.23, 173.24, and 173.28.

b. Quantity Limitations. Quantity limitations in packaging radioactive materials are listed in table 5-2. These requirements are explicit for each type of package. Exempt quantities are not considered. When the exempt quantity is ex-

ceeded, then the shipper must have the type of package dictated by these quantity limitations. From exempt quantities to the quantity listed under Type A package can be shipped in the Type A package. If this quantity is exceeded, then a Type B package is required and authorized up to the limit specified under the heading of Type B package. If the quantity under Type B package is exceeded in one package, then a Type B package is still used, but the shipper must get special permission to ship the package (a waiver). If the shipper does not want to get a waiver, then he must break the quantity shipped into two or more packages to get back within the limits specified under a Type B package.

Table 5-2. Quantity Limitation in Packaging

Transport group	Type A— quantity (in curies)	Type B— quantity (in curies)
I	0.001	50
II	0.05	20
III	3	200
IV	20	200
V	20	5,000
VI & VII	1,000	50,000
Special form	20	5,000

c. *General Requirements.* General packaging requirements for shipment of radioactive materials are outlined in 49 CFR. These requirements are many and varied, ranging from exempt material to large quantity and fissile material.

(1) *Responsibility regarding containers.* When containers are supplied by the shipper, the shipper is responsible for ascertaining that all dangerous articles are packaged and shipped in containers meeting the minimum requirements. The shipper may accept the manufacturer's certification or specification marking. When containers are supplied by the carrier, the shipper shall determine that the containers in which commodities are to be loaded are proper containers. This is done by examining the manufacturer's ID plate, specification marking, or certification by the carrier.

(2) *Mandatory information.* Standard requirements for all packages containing radioactive materials include the following information.

(a) There will be no significant release of material. In this case, the packaging must be sufficient to prevent the loss of radioactive contents to the air or surrounding environment under normal transport conditions. If this mate-

rial is released, a major health hazard may exist and contamination of the vehicle and possibly the area through which the vehicle has passed may result.

(b) The effectiveness of the packaging will not be reduced with transport. The tests for each type of packaging material must be met. If these requirements are not met, the container is not acceptable.

(c) There will be no explosive vapor mixture. This requirement is self-explanatory. The package should not contain material which emits explosive vapors. All vapors emitted have to be contained since they are probably radioactive.

(d) Each container must be marked with letters and numbers identifying the DOT (ICC) specifications assigned to that type of package. These markings must be stamped, embossed, burned, printed, or otherwise marked on the package. The name and address of the shipper, the symbol of the manufacturer of the package, or the user who assumes responsibility for compliance with the specification requirements must also be placed on the outside of the package.

(3) *Reuse of containers.* Containers used more than once (refilled and reshipped after having been previously emptied), including closure devices and cushioning material, must be in such condition that they comply in all respects with the prescribed requirements. Single-trip containers from which the contents have once been removed shall not be used again unless retested in accordance with BofE standards. The outside of each package must incorporate a feature such as a seal, which is not readily breakable; and which, while intact, will be evidence that the package has not been opened illicitly. The smallest outside dimension of any package must be four inches or greater.

(4) *Shielding.* Radioactive materials must be inclosed in packaging which has been designed to maintain shielding efficiency and leak tightness so that, under conditions normally incident to transportation, there will be no release of radioactive material. If necessary, additional suitable inside packaging must be used, i.e., lead or other dense material for shielding and double sealing of leak tightness.

(5) *Safeguards.* The packaging must be so designed, constructed, and loaded that, when large quantities of radioactive material are transported, heating is not a major factor. (Temperatures will not exceed 122° F. on the package surface in the shade or 180° F. at the external surface

of the vehicle on which the material is loaded.) Liquid material must be packaged in or within leak-resistant and corrosion-resistant inner containers. The packaging must be adequate to prevent loss or dispersal if subjected to the 30-foot drop test. Sufficient absorbent material must be provided to absorb at least twice the volume of radioactive liquid contents. Absorbent material may be located outside the radiation shield only when it is shown that, if the radioactive contents were taken up by the absorbed material, the resultant dose rate at the surface of the package would not exceed 1,000 millirem/hr. The package must not show any significant removable radioactive surface contamination.

d. Maximum Dose Rate. The maximum dose rate allowable for a mode of transportation must be accurately measured.

(1) Sealed car shipment—except by aircraft—cannot exceed the following requirements:

(a) 1,000 millirem/hr at 3 feet from the external surface of the package.

(b) 200 millirem/hr at any point on the external surface of the car or vehicle.

(c) 10 millirem/hr at 6 feet from the external surface of the car or vehicle.

(d) 2 millirem/hr in any normally occupied position in the car or vehicle.

Note. 1 millirem = 1 millirad.

(2) Other shipments, to include compatible cargo shipment and shipments by aircraft, must be packaged in suitable packages (shielded if necessary) so that at any time during normal conditions incident to transportation, the dose rate does not exceed 200 millirem/hr at any point on the external surface of the package, the transport index does not exceed 10, and the total transport indexes/car are not greater than 50.

e. Waivers. If any of the requirements for packaging, type of package, quantity limitation, or dose rate are exceeded, a waiver for shipment must be obtained by the shipper and the material must be escorted. Other requirements for shipment are covered in 49 CFR, Part 178 and in 173.393, 173.394, 173.395, and 173.398.

f. Label Exemptions. Small quantities of radioactive material and radioactive devices containing small quantities of radioactive material in normal form are exempt from labeling and packaging requirements. Since these are materials which require no escort, they will be excluded from any major discussion; however, regulations

governing their shipment can be found in 49 CFR 173.391 and 173.392.

5-6. Fissile Materials

a. General. The regulations are very explicit on exemptions and packaging requirements. In fact, they are too detailed to cover completely in this manual. To ship fissile materials other than the standard check and calibration source sets (UDM-6, TS-1230 plates, and so forth) 49 CFR 173.396 must be followed in detail.

b. Packaging.

(1) Fissile Class I includes packages which are nuclearly safe in any number and in any arrangement under all foreseeable circumstances of transport. For these materials no transport index is needed unless required by the radiation level.

(2) Fissile Class II includes packages which, in limited number, are nuclearly safe in any arrangement under all foreseeable circumstances of transport. These materials may be transported in any arrangement but in numbers which do not exceed an aggregate of 50 radiation units. Such shipments require no nuclear criticality safety control by the shipper during transport.

(3) Fissile Class III includes packages which are nuclearly safe by reason of special arrangement.

c. Mixing. Mixing of packages of other types of radioactive materials including Fissile Class I with Fissile Class II is permissible provided no more than 50 units are carried in any one car or vehicle.

5-7. Package Labels

The label to be used shall be determined by the dose rate at the surface, transport index, quantity of material shipped, or other considerations as follows:

a. Radioactive White-I Label. The dose rate at the external surface of the package must not exceed 0.5 millirem/hr. This label cannot be used for Class II packages.

b. Radioactive Yellow-II Label. This label will be used when the dose rate of the radioactive shipment exceeds the limits of white label requirements. The yellow-II dose rate limitations are not to exceed 10 millirem/hr at the external surface of the package and a dose rate at 3 feet

empt quantities, requiring a waiver. Placards must be placed in front, back, and on both sides of vehicles, must have the "RADIOACTIVE" sign letters 4 inches high as a minimum with at least a 1-inch border, and must be black letters on a yellow background.

(4) *References.* Further information on road movement can be obtained from 49 CFR 177 and pertinent military regulations (DSAR 4500.3).

d. Rail Movement.

(1) *Shipment.* Rail movement of radioactive materials will be made in accordance with applicable DOT regulations and other pertinent publications. Expedited service is required and will be obtained in accordance with existing regulations (DSAR 4500.3). Guard cars for the accommodation of personnel escorting the shipment will be positioned in the train so as to immediately follow the car containing the cargo. Distances prescribed for personnel must be maintained. Cars containing radioactive materials must not be positioned immediately next to cars containing explosives and other hazardous material or cars containing undeveloped film. The design of the placard must conform to 49 CFR 174.553.

(2) *References.* Further information on rail movement can be found in 49 CFR 174 and 175, and in pertinent military regulations (DSAR 4500.3).

e. Sea Movement.

(1) *Cargo shipment.* All water movement or radioactive materials will be made in accordance with Coast Guard regulation CG 108. Prior to loading or unloading radioactive materials, particularly those in heavily shielded metal cast, a thorough check will be made of the ship cranes to be used. Only those cranes capable of lifting five times the weight of the container and its contents will be employed. A check must be made of the latest cargo gear certificate of inspection to determine validity. Worn cargo falls, purchases, and guys must be replaced. All containers of radioactive materials stored on board a vessel must be efficiently lashed, chocked, and braced to prevent shifting or leakage by movement of the containers in any direction during shipment.

(2) *Personnel exposure.* Personnel will not remain unnecessarily in a hold or compartment, or close to a hold, compartment, or deck cargo space containing radioactive materials. The shipper must furnish the carrier with such information and equipment as are necessary for the protection of the carrier's employees, stevedores, or

other persons engaged in handling such cargo. In no instance will any person who must necessarily remain in a hold or compartment, or in the proximity of a hold, compartment, or deck cargo space containing radioactive materials, be exposed to a total of more than 100 millirem of gamma radiation or equivalent in any 7-day period.

5-9. Minimum Contamination Levels

Removable surface contamination will not exceed the limits given in table 5-3. Generally, the use of two or three times background on portable radiac instruments is appropriate since more precise measuring equipment will not be available at most military installations or with the technical escort team. In nonclosed vehicles, the dose rate of fixed contamination must not be greater than 0.5 mrem/hr. In closed vehicles, the dose rate of fixed contamination must not be greater than 10 mrem/hr at interim surface or 2 mrem/hr at 3 feet from any interim surface. The vehicle must be stenciled "FOR RADIOACTIVE MATERIALS USE ONLY" with letters 3 inches high. The stencil must be displayed on the outside of the vehicle and on both sides. Furthermore, the vehicle must be kept closed at all times.

Table 5-3. Minimum Remaining Surface Contamination

Curies All contaminants	dpm	Sources
10^{-11} Ci/cm ²	2,200/100 cm ²	beta-gamma
10^{-12} Ci/cm ²	220/100 cm ²	alpha (except natural or depleted U and natural Th)
Contaminant known to be natural or depleted U or natural Th		
10^{-10} Ci/cm ²	22,000/100 cm ²	beta-gamma
10^{-11} Ci/cm ²	2,200/100 cm ²	alpha

Note. Generally use two or three times backgrounds on appropriate instrument since counting equipment necessary to make the above evaluation is not present at most installations.

5-10. Shipping Papers

Certain information must be included on the shipping papers of radioactive materials movements. When packages are exempted from labeling, the exemption must be indicated by the words "No Label Required" immediately following the description on the shipping papers. In addition, shipping papers must include—

a. Transportation group or groups of the radionuclides in the radioactive material if the material is in normal form.

b. Names of the radionuclides and description

of physical and chemical form if the material is in normal form.

c. Activity of the radioactive material in curies.

d. Type of label applied to the package.

e. For fissile radioactive materials, the fissile class of the package and the weight in grams or kilograms of fissile isotopes.

f. For export, a copy of any special permit issued by DOT for the package.

g. Reports of shipments (REPSHIP) and export of arrival of radioactive material will be made by the transportation officer.

5-11. Accident/Incident Control and Reporting

a. *Action to Take in Case of an Accident Involving Radioactive or Fissile Materials.* The senior escort personnel will—

(1) If radioactive materials are exposed or if contamination is suspected to exist, establish an exclusion area to prevent the general public from inadvertent exposure to radiation or contamination. Accept local assistance if required.

(2) Take such other emergency action as the situation requires (rescue operations, fire fighting, and so forth).

(3) Notify the nearest military installation and request immediate assistance, giving pertinent information as follows:

(a) Location and nature of accident.

(b) Emergency procedures initiated.

(c) Type of materials involved and help required.

A request should be made that the shipping installation be notified at the earliest possible time; the appropriate departmental officer should be notified; and an on-the-scene report should be prepared. The report will detail all pertinent fac-

tors contributing to the accident and the emergency measures initiated to protect personnel and property. This report will be submitted within 24 hours to the safety officer of the shipping installation with copies to the departmental office and to the safety office of the military installation providing assistance. Additional reports will be needed if military vehicles are involved.

b. *Action to Take in Case of an Incident Involving Radioactive or Fissile Materials.* The senior person present will—

(1) Take the necessary precautionary measures to protect personnel and property and to prevent development of the incident into an accident.

(2) Notify the nearest military installation to request assistance if required.

(3) Notify the shipping installation and request instructions to safely complete the mission.

(4) Prepare an on-the scene report, which will detail the incident, emergency measures taken, and assistance requested and rendered to reduce the incident.

(5) Report the incident to the safety director of the shipping installation within 24 hours of the event. The safety officer will submit a written report within 5 days to the appropriate service safety director and to such other command levels as are required. This written report will describe in detail the incident, emergency actions taken, and assistance requested and rendered to reduce the incident.

Reports indicated in *a* and *b* above will not be given to local police officers or to representatives of the press. The senior man present will make such answers to the local police as are required by law to complete their report but will not discuss the nature of the lading, except to indicate the need for the required safety measures taken. If commercial carrier equipment is involved in an accident, additional reports will be required.

CHAPTER 6

SAFETY AND SECURITY

(STANAG 2137, 3400)

Section I. SAFETY

6-1. General

Numerous volumes of information on explosive safety rules and regulations have been written by various civilian and Federal agencies. This manual has neither the scope nor length to attempt to consolidate all of these regulations and other information that may be pertinent to technical escort personnel. Also, to offer a simplified, abbreviated set of safety rules or facts would, in itself, be unsafe. Therefore, this section will be concerned with pertinent publications on explosives; chemical, biological, and radiological safety; and safety responsibilities. These publications, when used correctly, provide a wealth of information on safety principles and procedures. To supplement these, the Technical Escort Team, upon determining what type of container or munition it must escort, can consult other appropriate publications describing specific characteristics and properties of the cargo.

6-2. Publications

a. In addition to many other publications on explosives safety, the following publications are most often used within a particular service. These publications can be used as the basic references during technical escort operations.

(1) Department of the Army provides safety guidelines for handling CB materials in the 385-series regulations. Joint Service Manual TM 9-1300-214, FM 5-25, and TM 9-1300-206 offer additional guidance.

(2) Navy/Marine Corps regulations include Ordnance Pamphlet NAVORD OP 5, volume 1, Ammunition Ashore—Handling, Stowing, and Shipping. Volume 1, OP 2165, Navy Transportation Safety Handbook, and OP 2239, Driver's Handbook—Ammunition, Explosives, and Dangerous Articles, also contain regulations related to technical escort.

(3) The Air Force publication most pertinent to technical escort is AFM 127-100, Explosives Safety Manual.

b. Present publications on safe handling, transportation, and disposal of chemical and etiological materials will provide appropriate information to aid the escort team in accomplishing its mission. These publications contain information on agent effects, characteristics, and decontamination and testing procedures. Escort personnel, as a minimum, must master the safety requirements of their particular service in regard to these toxic agents. Army publications include AMCR 385-102, AMCR 385-104, and AMCR 385-235; Air Force publications include AFM 127-100; and Navy/Marine Corps publications include NAVORD OP 5 and NAVORD OP 2165.

c. There are many Federal and military publications which provide specific information on radioactive materials. Those which specifically provide information on handling, transportation, and storage of materials which spontaneously emit ionizing radiation are of primary importance. These publications provide detailed information on the rules and regulations concerning such matters as minimal dose limitation, personnel records, and posting of warning signs. Thorough examination of these publications prior to commencing the escort mission will aid the team in conducting a safe mission. Federal publications include CFR 10, Part 20, Atomic Energy; Joint Service publications include AR 40-14.

6-3. Responsibility

a. Command. Safety is a command responsibility. The publications of all the services emphasize that the commanding officer is responsible for all aspects of safety within the command. Accidents usually result from failure to observe regulations, failure to understand hazards, or failure to

take necessary precautions. In each case the "failure" denotes human error, specific carelessness, or poor judgment. The supervisor must advise and train his men so that they are constantly aware of the hazardous nature of their work. Furthermore, he must indoctrinate his men with the philosophy that each individual is responsible for his own and his fellow workers' safety; and he must promote safety-mindedness by persuasion, and by authoritative force when necessary.

b. Individual. DSAR 4600.3 states that everyone participating in the shipment of E&ODA is responsible for compliance with rules and regulations of the regulatory bodies governing their safety. This is just one of the many publications that places the responsibility for explosives safety on the individual. It is the responsibility of every individual involved with handling, safety, and transportation of any dangerous material to thoroughly know the hazards, precautions, and procedures involved in its safety.

Section II. SECURITY

6-4. General

a. Technical escort personnel are frequently called upon to escort classified shipments. In many cases, a member of the team may be designated as an official courier. Security requirements during shipment of such material are most stringent and require specialized training of technical escort personnel. It is recommended that the training program contained in appendix VII, FM 19-30 be used as necessary to provide escort personnel basic or refresher training in general security requirements. Further guidance for physical security training can be found in Army Subject Schedule 19-30 and Army Training Circular 19-2.

b. Shipments in transit are vulnerable to numerous hazards, both natural and manmade. These hazards include sabotage, espionage, dissident activity, adverse weather, and accidents. Escort personnel must fully understand the threat posed by such hazards and be constantly vigilant for evidence of circumstances indicative of such activity. It is imperative that all personnel concerned with movements as prescribed in this technical manual regard the shipments as particularly sensitive. When shipments emanate from a military installation, escort arrangements should be coordinated with the responsible security officer or Provost Marshal.

6-5. Release of Information by Individuals

It is also imperative that each member of the team be fully aware of the high degree of responsibility and trust that is placed upon him as an individual. Escort shipments, whether classified or unclassified, should be regarded as sensitive information; and escort personnel should not discuss information concerning the shipments with family or friends. Classified shipments must, of

course, be handled on a need-to-know basis. Personnel actually performing the escort duty will not discuss the details of the mission with other members of the unit.

a. Personnel accompanying a shipment should hold themselves aloof from, and refrain from engaging in conversations with, civilians and military personnel not participating in the shipment. When such personnel are properly identified and are duly authorized to inspect the cargo, the contents of the containers and the intended use will not be divulged.

b. Frequent unit security checks can be made to test the security-consciousness of personnel. Tests must be conducted so that it will not be readily apparent that a security test is being made.

6-6. Physical Security of Cargo

In addition to protecting the cargo by disseminating as little information about its existence as possible, the technical escort team must maintain its physical possession while en route. Shipments are most vulnerable during loading and unloading and at any time the shipment is stopped. Continuous surveillance of the cargo will be maintained with special emphasis during dangerous periods. Personnel should be assigned to guard the cargo at each stop, scheduled or unscheduled.

6-7. News Releases

The senior surviving member of an escort team should be responsible for releasing information to the public news media in the event of an accident or incident. Several different news releases may be necessary, to satisfy the situation or explain the nature of the accident and provide followup information (app H contains a format).

The names, affiliations, and addresses of those to whom information is released should be recorded in the emergency action log.

a. Classified Cargo. In case of an accident or incident involving classified material, the escort team should make every effort to cover any exposed cargo or make it unrecognizable. The assistance of local authorities should be requested to keep persons away from the cargo.

b. Relations With the Press. The technical escort team should refrain from using deadly force if news media representatives refuse to cooperate in protecting classified DOD material. However, the team can—

- (1) Identify press representatives by checking their credentials.

- (2) Write down the name of the reporter and the news service he represents.

- (3) Inform news media representatives of the presence of exposed classified material which cannot be removed or covered immediately and ask them to cooperate in its protection. Photographers will be informed that violations of the prohibition on photographing classified DOD material are also violations of Federal criminal statutes (78 CFR 795, 797).

- (4) Request assistance of appropriate civil law-enforcement officials in preventing compromise of such material and in recovering all photographs, negatives, and sketches which are presumed to contain classified information.

- (5) Request the cooperation of the superiors of the offending news media representative, informing them that the publication of such classified information or refusal to return it to military authorities will be a violation of Federal statutes (18 CFR 793(4), 795, 797).

6-8. Arming Personnel

The force necessary to prevent or terminate what a person reasonably believes to be an unlawful or unauthorized interference with Government property should be justifiable. The authority and jurisdiction of escort personnel are very limited. They are permitted to use only that force necessary to protect Government property. A guard must first warn an intruder that the property he is securing is Federal property and that he is rightful custodian. The guard will attempt oral persuasion to keep anyone from unlawful possession. Additionally, the guard will attempt to request assistance from local law enforcement

agencies and use whatever nondeadly force believed reasonably necessary. Deadly force will be used only as a last resort to prevent a dangerous felony. Classified missions and other shipments of chemical and biological material specified by service regulations may require the use of weapons. In special situations the requirement to arm a technical escort team may be determined by the technical escort unit requirements.

a. Arms and Qualifications. The selection of arms for use on an escort mission might include shotguns, rifles, or pistols, or a combination of the arms, depending on the sensitivity of the mission, areas to be traveled through, and the qualifications of personnel. The timely issuance of weapons and ammunition should be the responsibility of the team leader. Personnel accompanying a shipment as guards may find the shotgun more advantageous to use in populated areas due to its restricted range. Should the shipment route be primarily through open, unpopulated terrain, a rifle may be more desirable due to its long-range capability. Because of the team leader's duties and the flexibility he must maintain, he should be armed with a pistol regardless of the type of weapon carried by other team members. All personnel should have completed the standard qualification requirements for the specific weapon in their possessions. Personnel should also have successfully completed unit training consisting of the legal authority, responsibility, and jurisdiction of escorts performing armed guard duty to include search, seizure, and the use of fire arms; and the latest policies and doctrine on the use of force and the care and use of weapons. Teams accompanying air shipments should be armed with pistols only; however, a combination of pistols and shotguns may be used on road, rail, and sea modes of transportation.

b. Security of Weapons. The team leader or assistant leader should employ strict control of weapons and ammunition while on an escort mission. During highway and air movements, the weapons and ammunition should be in the immediate possession of an individual exercising direct control, until issued for performance of security duty. On board a ship, the weapons and ammunition will be secured as directed by the ship's captain. When traveling by rail guard car, weapons should be secured in an appropriate arms rack and the ammunition secured by the team leader assistant until needed for security duty. The escort team should use weapon and ammunition storage facilities at all military installations or

activities during overnight stops, or while on extended duty. The loss of weapons or ammunition should be reported to the activity security office and to the escort unit. During travel, the loss of weapons or ammunition should be reported to the team's unit.

c. Safety Aspects of Weapons.

(1) When bearing arms, personnel will keep the weapon on safe except when undergoing inspections prior to going on or being relieved from guard duty.

(2) Pistols should remain holstered, and the ammunition magazines should be kept in the ammunition pouch except during official inspection and upon being posted on guard duty. A round will not be inserted in the firing chamber except in case of intent to use the weapon.

(3) Personnel armed with shotguns, upon going on guard duty, may load the magazine; however, a round will not be inserted into the chamber except in case of intent to use the weapon.

(4) Following duty requiring weapons and ammunition, all weapons and ammunition will be thoroughly cleared and secured.

d. Weapons Aboard Commercial Aircraft. By regulation (AR 190-14), any person whose official duties require him to have on or about his person a concealed or unconcealed deadly or dangerous weapon while a passenger aboard any aircraft operated by commercial air carriers in air transportation shall confidentially notify the airline station manager or supervising agency (or, in their absence, the ticket agent) of this fact before boarding the aircraft. Upon request from airline officials or employees, he must present his travel orders which should constitute authorization to carry weapons. The weapons and ammunition will not be shipped in personal baggage or in escort kits but should be hand-carried by escort team personnel. Under no conditions should a loaded weapon be carried aboard a commercial aircraft.

6-9. Legal Aspects of the Use of Force

The decision as to when and how much force can be used will ultimately depend on the facts and circumstances of each case as well as the law in the state where the incident occurs and will be guided by the provisions of AR 190-28. Accordingly, the information presented below is to be used as a guide only and cannot be regarded as a

firm solution to any problem. In any event, military personnel should take only such actions as are immediately necessary to protect Government property; and, whenever possible, the civilian authorities should be called upon to take action.

a. Defense of Property. It is the generally accepted rule that a person owning, or lawfully in possession of, property may use such force as is reasonably necessary under the circumstances to protect that property; and for the exertion of such force he is not liable either criminally or civilly. It is also the general rule, however, that the use of a deadly weapon in the protection of property is unjustifiable, except in extreme cases.

(1) A person is privileged to threaten or intentionally use force against another for the purpose of preventing or terminating what he reasonably believes to be an unlawful interference with his property. Only such degree of force or threat of force may intentionally be used as the actor reasonably believes is necessary to prevent or terminate the interference. It should be noted that the United States as a property owner will not be distinguished from private owners of property since there appears to be no legal basis for such distinction in either the cases or statutes dealing with the protection of property.

(2) As long as the defense of property involves only the use of nondeadly force (that is, force neither intended nor likely to cause death or serious bodily harm), the above rule is generally recognized.

(3) The majority rule regarding the defense of property by the use of deadly force limits the use of such force to situations in which the victim is committing a dangerous felony—that is, one involving violence, force, or surprise. The rule is not stated in exactly the same way in every jurisdiction, but the variations are not too great. Thus, it is said that deadly force may be used in defense of property only against one who manifestly intends or endeavors, by violence or surprise, to commit a known felony, or when there is a felonious use of force on the part of the aggressor, or a felony which is either an atrocious crime or one attempted to be committed by force or surprise.

b. What a Serviceman Can Do. Ordinarily, a serviceman must tell a person intruding in or interfering with government property to desist. If that fails, he may use whatever nondeadly force he reasonably believes necessary to terminate or prevent the intrusion. He may resort to deadly

APPENDIX A

REFERENCES

(STANAG 2154, 2312, 2313, 2314, 3327, 3400, 3571)

A-1. Joint Service Publications*a. Department of Defense.*

DSAR 4500.3/AR 55-
355/AFM 75-2/MCO
P4600.14. Military Traffic Management Regulation.

b. Department of the Army.

AR 40-14/
BUMEDINST
6150.18-B/AFR
161-8/ DSAR 4145.24. Control and Recording Procedures: Occupational Exposure to Ionizing Radiation.

AR 55-38/NAVSUP
PUB 459, AFM 75-
34/MCO P4610.19,
DSAR 4500.15. Reporting of Transportation Discrepancies in Shipments (Reports Control Symbol MTMTS-54).

AR 55-80/NAVFAC
INST 11210.1B/AFR
75-88/MCO 11210.2/
DSAR 4500.19. Highways for National Defense.

AR 55-162/
OPNAVINST
4600.11A/AFR 75-24/
MCO 4643.5. Permits for Oversize, Overweight, or Other Special Military Movements on Public Highways in the Contiguous United States and the District of Columbia of the United States.

AR 55-355/AFM 75-2/
NAVSUP Pub 444
(Rev)/MCO P4600.14-
A/ DSAR 4500.3. Military Traffic Management Regulation.

AR 75-14/OPNAVINST
8027.1D/AFR 136-8/
MCO 8027.1A. Responsibilities for Explosive Ordnance Disposal.

AR 95-27/AFR 55-14/
OPNAVINST 3710.31. Operational Procedures for Aircraft Carrying Dangerous Materials as Cargo.

AR 740-32/
OPNAVINST 8070.1/
AFR 136-4/MCO
4030.25. Responsibilities for Technical Escort of Chemical, Biological, and Etiological Agents.

FM 3-10/MINIP 36-2/
AFM 355-4/
FMFM11-3. Employment of Chemical and Biological Agents.

TM 3-215/AFM 355-7 Military Chemistry and Chemical Agents.

TM 3-216/AFM 355-6 Technical Aspects of Biological Defense.

TM 3-240/AFM 105-7 Field Behavior of Chemical, Biological, and Radiological Agents.

TM 8-285/NAVMED P-5041/AFM 160-12.	Treatment of Chemical Agent Casualties.
TM 9-1300-200	Ammunition, General.
TM 9-1300-214/TO 11A-1-34.	Military Explosives.
(S) TM 9-1385-10/ (EODL) 62-44/TO 11-A-1-100-12.	EOD Procedures for Chemical and Biological Munitions (U).
TM 43-200/ NAVSANDA Pub 284/AFM 67-35/ NAVMC 1101/DSAM 4145.	Storage and Materials Handling.

c. Department of the Air Force.

AFM 71-4/TM 38-250/ NAVAIR 15-03-500/ MCO P4030.19/ DSAM 4145.3.	Packaging and Handling of Dangerous Materials for Transportation by Military Aircraft.
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A-2. Department of the Army Publications

AR 11-17	Chemical Surety Program.
AR 40-13	Radiological Emergency Medical Teams.
AR 50-2	Nuclear Accident and Incident Control (NAIC).
AR 50-21	Chemical and Biological Surety Program, Chemical-Biological Accident and Incident Control (CBAIC).
AR 55-16	Movement of Cargo by Air and Surface—Including Less than Release Unit and Parcel Post Shipments.
AR 55-55	Transportation of Radioactive and Fissile Materials Other Than Weap- ons.
AR 55-56	Transportation of Dangerous or Hazardous Chemical Materials.
AR 55-203	Movement of Nuclear Weapons, Nuclear Components and Related Classified Nonnuclear Materiel.
AR 55-228	Transportation by Water of Explosives and Hazardous Cargo.
AR 55-355	Military Traffic Management Regulation.
AR 59-11	Army Use of Logistic Airlift (LOGAIR).
AR 75-15 and CON Supplement 1 to AR 75-15	Responsibilities and Procedures for Explosive Ordnance Disposal. Explosives.
AR 190-14	Carrying of Firearms.
AR 190-28	Use of Force by Personnel Engaged in Law Enforcement and Security Duties.
AR 190-60	Physical Security Standards for Nuclear Weapons.
AR 385-14	Accident/Incident Report—Shipments of Conventional Explosives and Dangerous Articles by Commercial Carriers.
AR 385-25	Studies and Reviews, Nuclear Weapons Systems Operational Surety Programs.
AR 740-1	Storage and Supply Activity Operations.
AR 740-32	Responsibilities for Technical Escort of Chemical, Biological, and Etiological Agents.
AR 755-15	Disposal of Unwanted Radioactive Material.
(O) ¹ AMCR 11-38	Movement of CB Agents or Munitions.
AMCR 385-2	Accident Reporting—Routing of Required Reports.

¹ Army Material Command Regulation (AMCR)

AMCR 385-3	Reports of Explosions, CB Agent Releases, Radiation Incidents, Serious Accidents, and Nuclear Incidents at AMC Installations and Activities.
AMCR 385-19	AMC Chemical and Biological Weapons Safety Committee.
AMCR 385-27	Safety Regulations for Disposal of Bulk Chemical Agents and Munitions.
AMCR 385-28	Safety Regulations for Agent BZ.
AMCR 385-102	Safety Regulations for Chemical Agents GB and VX.
AMCR 385-104	Safety Criteria for Processing, Handling, and Decontamination.
(O) AMCR 385-235	Storage and Handling Criteria for Chemical Ammunition, Explosives, Chemical Warfare Agents, and Hazardous Chemicals.
FM 5-25	Explosives and Demolitions.
FM 9-15	Explosive Ordnance Disposal Unit Operations.
FM 19-4	Military Police Support, Theater of Operations.
FM 19-30	Physical Security.
FM 31-16	Counterterrorism Operations.
TC 19-2	Training of Courier Officers and Security Guards for Nuclear Weapons Shipments.
ASubjScd 19-30	Operational Training, Military Police Company (Physical Security).
TM 3-215	Military Chemistry and Chemical Agents.
TM 3-216	Technical Aspects of Biological Defense.
TM 3-220	Chemical, Biological, and Radiological (CBR) Decontamination.
TM 3-240	Field Behavior of Chemical, Biological, and Radiological Agents.
TM 3-250	Storage, Shipment, Handling, and Disposal of Chemical Agents and Hazardous Chemicals.
TM 3-4240-202-14	Operator, Organizational, DS and GS Maintenance Manual: Mask, Chemical-Biological: Field, ABC-M17 and Accessories.
TM 3-4240-204-14	Operator's, Organizational, DS and GS Maintenance Manual: Mask, Chemical-Biological: Special Purpose, M91A1; Mask, Chemical-Biological: Special Purpose, M9 and Accessories.
TM 3-4240-212-15	Operator, Organizational, DS, GS, and Depot Maintenance Manual: Breathing Apparatus, Oxygen Generating, M20.
TM 3-4240-219-14	Operator's Organizational, DS, and GS Maintenance Manual (Including Repair Parts and Special Tool Lists) Mask, Chemical-Biological; Aircraft, ABC-M24 and Accessories.
TM 3-4240-224-12	Operator and Organizational Maintenance Manual: Breathing Apparatus, Compressed Air, M15.
TM 3-4240-230-12	Operator and Organizational Maintenance Manual: Mask, Gas, and Organic Vapors, M10 (Including Repair Parts and Special Tool Lists).
TM 3-4240-231-12	Operator and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Mask, Gas, All-Purpose, M11A1.
TM 3-4240-232-12	Operator and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Mask, Gas, Ammonia, M12.
TM 3-4240-258-14	Operator, Organizational, DS, and GS Maintenance Manual: Mask, CBR: Field M17A1 and Accessories.
TM 3-6665-254-12	Operator and Organizational Maintenance Manual: Detector Kit, Chemical Agent, ABC-M18A2.
TM 9-1300-206	Care, Handling, Preservation, and Destruction of Ammunition.
(C) TM 9-1385-50	Techniques for Explosive Ordnance Disposal (U).
TM 10-277	Protective Clothing, Chemical Operations.
TM 55-315	Transportability Guidance for Safe Transport of Radioactive Materials.
TM 55-602	Movement of Special Freight.
TB 3-4230-207-10	Decontaminating and Reimpregnating Kit, Individual, M13.

TB 9-1300-203/1	Assembly of Explosive Components: Cartridge, 105-mm Howitzer: Gas, Nonpersistent, GB, M360; Projectile, M155-mm Gun: Gas, Nonpersistent, GB or GB Simulant Filled, M122; Projectile 155-mm Howitzer: Gas, Nonpersistent, GB or GB Simulant Filled, M121 or M121A1; Gas, Persistent, VX or VX Simulant Filled, M121A1; Projectile, 8-in. Howitzer: Gas, Nonpersistent, GB or GB Simulant Filled, M426; Gas, Persistent, VX or VX Simulant Filled, M426.
TB CML 73	Rockets, Chemical, 155-mm, M55 (GB or VX Filled), Rocket, Training Dummy, 115-mm, M60, and Rocket, Practice, Simulant, EG, 115-mm, M61.
TB CML 83	Calculator, Downwind Toxic Vapor Hazard Point Source, ABC-M2.
TB MED 114	Immunization.
TB MED 223	Respiratory Protective Devices.
TB MED 237	Collection and Preparation of Specimens for Shipment to Medical Laboratories.
TB MED 282	Anticholinesterase Intoxication: Pathophysiology Signs and Symptoms, and Management.
SB 3-30	Serviceability Standard for CB Materiel.
SB 3-30-2	Protective Mask Canisters and Filter Elements: Serviceability Lists.
SB 3-30-10	Field Protective Masks, M3, M4, and M9 Series and Protective Mask Canisters, M10A1 and M11: Serviceability Standard.
SB 3-30-24	Breathing Apparatus, Compressed Air, M15 and ABC-M15A1: Serviceability Standard.
SB 3-4240-7	Respirator, Air Filtering, Paint Spray, Two-Cartridge, M6; Respirator, Air Filtering, Paint Spray, M5; Cartridge, Absorbent, M2; and Filter, Aerosol, M11; Serviceability Standard.

A-3. Miscellaneous Publications

Federal Register, Vol. 33, No. 194, Part II, Department of Transportation Hazardous Materials Regulation Board: Radioactive Materials and Other Miscellaneous Amendments.¹

Code of Federal Regulations:

- Title 10, Atomic Energy.¹
- Title 14, Aeronautics and Space.¹
- Title 33, Port Security.¹
- Title 42, Public Health.¹
- Title 46, Shipping.¹
- Title 49, Transportation.¹

Agent T. C. George's Tariff No. 23 (Hazardous Materials Regulations of the Department of Transportation).²

Bureau of Explosives:

Pamphlet No. 6, Illustrating Methods for Loading and Bracing Carload and Less than Carload Shipments of Explosives and Other Dangerous Articles.²

Pamphlet 6A, Illustrating Methods for Loading and Bracing Carload and Less than Carload Shipments of Loaded Projectiles, Loaded Bombs, Etc.²

Pamphlet 6C, Illustrating Methods for Loading and Bracing Trailers and Less-Than-Trailer Shipments of Explosives and Other Dangerous Articles Via Trailer-On-Flat-Car (TOFC) or Container-On-Flat-Car (COFC).²

Airline Tariff Publishers, Inc., Agent: The Official Air Transport Restricted Articles Tariff No. 6-D.³

¹ Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

² Bureau of Explosives, RARITA Center, Building 817, Edison, NJ 08817.

³ Airline Tariff Publishers, Inc., 1825 K St., NW, Washington, DC 20006.

APPENDIX E

CRITERIA FOR INSPECTION OF MOTOR VEHICLES (STANAG 2154)

E-1. General Instructions

All spaces on DD Form 626 (app G) shall be filled in. The following instructions shall be observed in completing DD Form 626.

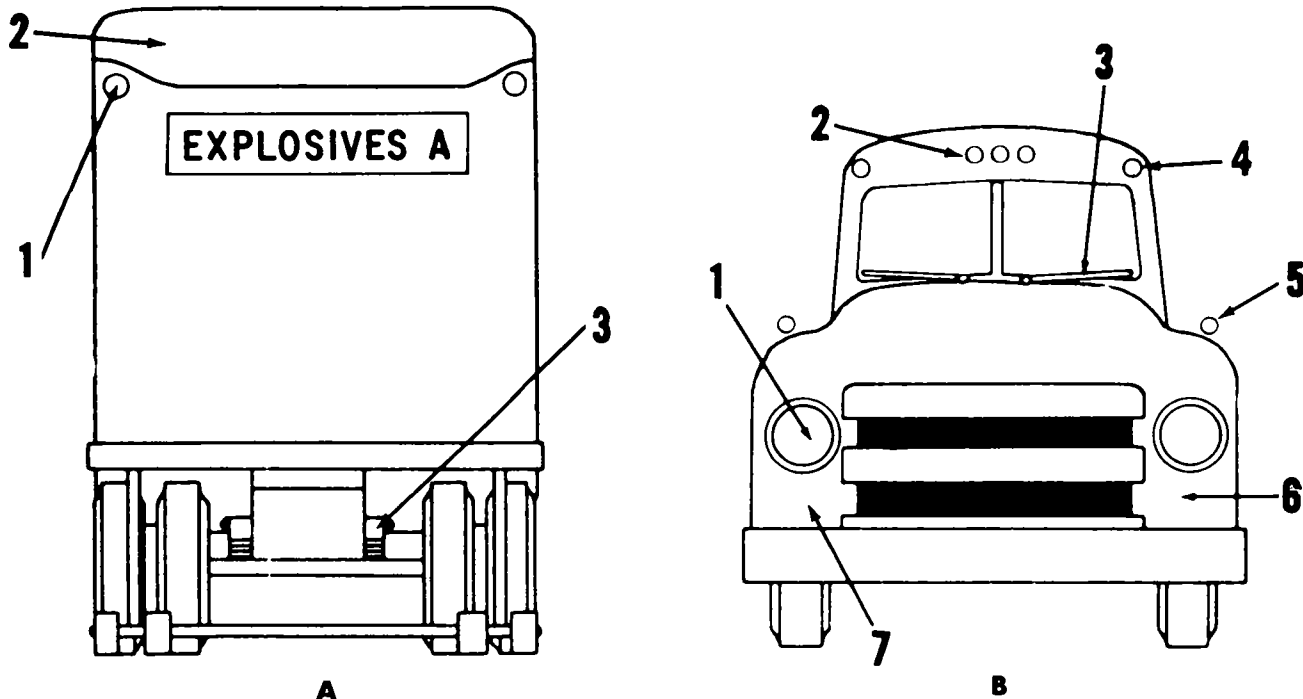
- a. Date.* Use the date and hour the carrier's equipment is inspected.
- b. Reporting Installation.* Insert the name of the installation making the inspection.
- c. Origin or Destination.* Indicate whether the reporting installation is origin or destination of the shipment.
- d. Name of Carrier.* Give the full name of the trucking company. Do not use abbreviations or nicknames.
- e. Shipment Received From.* Enter the name of point of origin.
- f. Entering.* Indicate whether vehicle was empty or loaded upon arrival at the reporting installation.
- g. Name of Driver.* Enter the name of the driver of the vehicle presented for inspection. (Off-station drivers must be 21 years of age or older.)
- h. Driver's State Permit Number.* The driver must have a valid state driver's permit. Military service operators must have a valid SF 46, US Government Motor Operator's Vehicle Identification Card.
- i. Government Bill of Lading.* Enter the GBL number, if applicable.
- j. Doctor's Certificate Dated.* Enter date from certificate. Every commercial driver must have a certificate of physical examination (or a photographically reproduced copy) indicating that the examination has been made within the preceding 36 months. If the certificate indicates that glasses are required, the driver must have them on his person. DOT—formerly ICC—regulations require that the driver be in good physical condition.
- k. Type of Vehicle.* Indicate the type of vehicle. (Double trailers may be used to transport explosives only if there is complete compliance with paragraphs 293.70(a) through (c) of the DOT Motor Carrier Safety Regulations.)
- l. Truck License Number.* Indicate any current state license attached to the tractor.
- m. ICC (DOT) Number.* Enter number of permit shown on side of tractor.
- n. Trailer(s) Number and License.* Indicate the trailer(s) number, if shown, and any current state license attached to the trailer.
- o. Sleeper Cab.* Indicate whether the vehicle has a sleeper cab.
- p. Equipment.* Indicate whether equipment is owned by the presenting carrier or is leased. If it is leased, indicate the name of the owner. (If the vehicle is leased, the owner's name must appear on the side of the tractor.)
- q. Approved/Rejected Blocks.* Indicate, by checking the appropriate block, whether the vehicle is approved or rejected. If rejected, give reasons on reverse side of form.
- r. Signature (of Inspector).* This space shall be signed by the person making the preloading inspection.
- s. Signature (of Inspector).* This second signature space shall be signed by the person making the loaded vehicle inspection.
- t. Signature (of Driver).* This space shall be signed by the driver of the inspected vehicle.

E-2. Criteria for Motor Vehicle Inspections

The criteria specified below should be observed by military activities when inspecting motor vehicles tendered for use in transporting explosives or other dangerous articles. The item numbers correspond to the numbered items on DD Form 626. All items shall be checked as satisfactory or unsatisfactory on DD Form 626, and unsatisfactory conditions shall be explained in the "Remarks" column. Inspectors must exercise sound judgment in estimating satisfactory working con-

dition of parts for which no specific standard of operation can be established. General vehicle

inspection requirements are illustrated in figures E-1 through E-5.



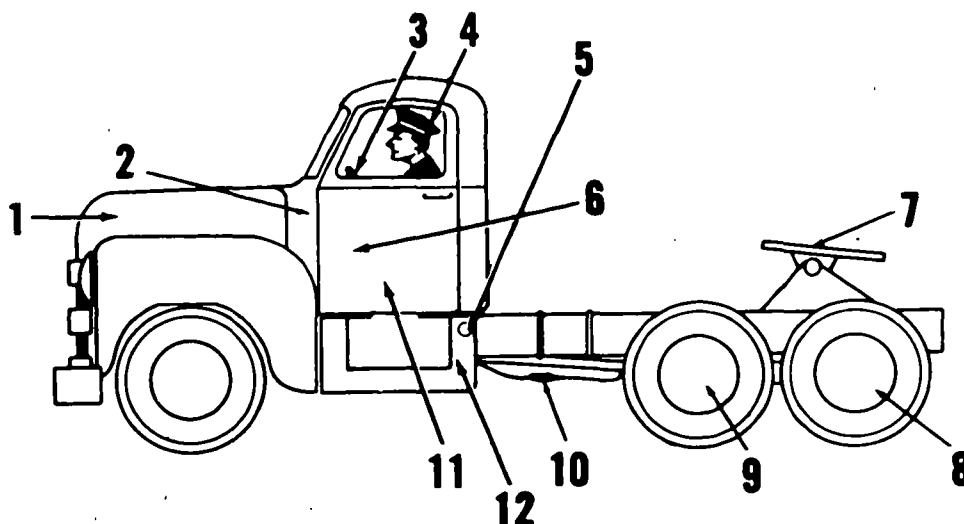
A

1. Front clearance lamps: Amber color; lamps should be operative, clean, and free of cracks.
2. A fire-resistant and waterproof tarpaulin must be carried on all open equipment.
3. Springs, suspension hanger mechanism, tension bar assemblies and auxiliary parts should be in good condition and properly lubricated.

B

1. Headlights shall number at least two and be in good operating condition including the high-low beam.
2. Identification lamps (bar lights): Amber color; should be operative, clean, and free of cracks.
3. Two windshield wipers in good operating condition are required. Defroster must be operative when conditions require its use.
4. Clearance lamps: Amber color; one lamp at each side; should be operative, clean, and free of cracks.
5. Turn signals. One at each side. Vehicle must have system which will permit two front and two rear signals to flash simultaneously.
6. Horn must be operative, securely mounted, and of sufficient volume to ensure that it fulfills its intended purpose.
7. Fog lamps or spotlight not required; however, if installed, they must be operating.

Figure E-1. Tractor-trailer inspection chart (illumination equipment).

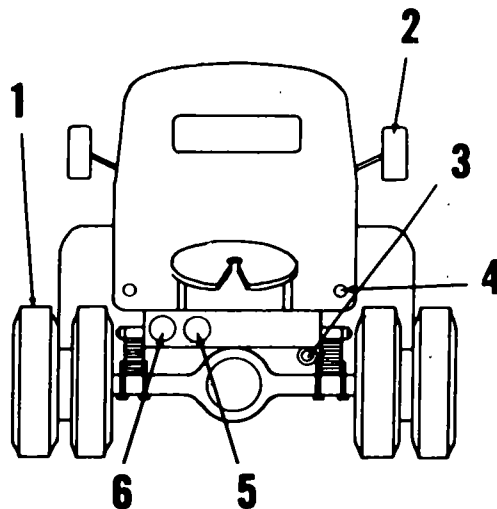


1. Engine, body, cab, and chassis should be clean and free of excessive grease, oil, or mud.
2. Spare fuse and bulb for each type used.
3. Steering mechanism should be in good adjustment, securely mounted, and not leaking lubricant.
4. Driver must have health certificate, operator's license, and copy of lease agreement on his person. He cannot smoke while driving, loading, or unloading. He must receive a copy of the fire-fighting instructions from the loading installation.
5. Fuel tank inlet and line should be free of leaks and securely mounted. Gas cap should have a gasket.
6. Fire Extinguishers - Vehicles transporting Class A or Class B ammunition, explosives, poisons, or other dangerous articles must carry two fire extinguishers properly filled, securely mounted on brackets, and readily accessible. Each unit shall use a nonfreezing extinguishing agent. For transportation of Class C explosives, only one extinguisher is required.
7. Fifth-wheel plate and king pin must be in good operating condition. No excessive oil or grease.
8. Brakes must all be operative, including hand brake and air-pressure warning device.
9. Wheel lugs shall be tight and none shall be missing.
10. There shall be no bare wires on either the tractor or trailer. All splices must be in good condition and properly insulated.
11. Highway warning equipment must include at least two clean red cloth or red plastic flags (at least 12 inches square) with adequate standards, and three red electric lanterns or three red emergency reflectors.
12. LPG, butane, and propane fuels are prohibited in explosives area.

Figure E-2. Tractor-trailer inspection chart (engine, body, cab, and chassis).

FLATBED EQUIPMENT

Lighting requirements for flatbeds are same as for vans, except that all top lamps are placed at bed level. Placards must be placed on side of trailer, not attached to load.



1. Tires shall not be smooth nor have cuts or injuries extending into the cord body. Tires should be properly matched.
2. Two rear-vision mirrors are required. They should be clean and free of cracks.
3. Exhaust system shall be in good condition and securely mounted and shall discharge to the rear of the cab, if not vertically, beyond any saddle tanks.
4. Reflector: Red color; one reflector on each side; should be clean and free of cracks.
5. Stop lamp: Red or amber or any shade between; should be operative, clean, and free of cracks.
6. Tail lamp: Red color; should be operative, clean, and free of cracks.

Figure E-3. Tractor-trailer inspection chart (flatbed equipment).

Item No.	Inspection criteria	Item No.	Inspection criteria
1	Engine, body, cab, and chassis clean. Engine and cab compartment must be clean. There shall be no excessive oil or grease, and the cab floor shall be free of debris. Understructure of cab and chassis shall be checked for excessive grease and mud. Tractor doors must not be blocked in any way that could deny the driver free exit.		securely mounted. Steering gear case must not leak lubricant. Pitman arm must be securely mounted and shall not be bent out of normal shape. Steering system shall be in good adjustment.
2	Steering mechanism. Steering mechanism must be in good condition and be correctly and	3	Horn operative. Horn must be securely mounted, operative, and of adequate volume for its purpose. Horn may be operated electrically or by air. Only one horn per vehicle need be operative.

MATERIAL INSPECTION AND RECEIVING REPORT		1. PROC. INSTRUMENT IDEN (CONTRACT) F4260069C3117		10. ORDER NO.	6. INVOICE NO.	7. PAGE 1 OF 1
						8. ACCEPTANCE POINT S
2. SHIPMENT NO DIM0007	3. DATE SHIPPED 71 Mar 12	4. B/L TCN E8594661	5. DISCOUNT TERMS K			
9. PRIME CONTRACTOR DELL INDUSTRIES WAYCROSS MACHINE SHOPS DIVISION 1000 Garlington Waycross, Georgia 31501			10. ADMINISTERED BY DCASR 3100 Maple Dr. N.E. Atlanta, Georgia 30305		CODE S1102A	
11. SHIPPED FROM (If other than 9) SEE BLOCK 9		CODE	FOB: S	12. PAYMENT WILL BE MADE BY DISBURSING OFFICER DCASR 3100 Maple Dr. N.E. Atlanta, Georgia 30305		
13. SHIPPED TO TRANSPORTATION OFFICER ANNISTON ARMY DEPOT ANNISTON, ALABAMA 36201		CODE	14. MARKED FOR Contract F4260069C3117 FW202692752001			
15. ITEM NO 1	16. STOCK/PART NO 1325 702 3713 E969 25 lb. practice bomb BDU 33/B 100 boxes mfg lot DIW-1-10-11-12-13	DESCRIPTION		17. QUANTITY SHIP O/REC'D*	18. UNIT a	19. UNIT PRICE 4.25
				20. AMOUNT 34,000.00		
SAMPLE						
21. PROCUREMENT QUALITY ASSURANCE				22. RECEIVER'S USE		
☐ POA ☐ A. ORIGIN ACCEPTANCE of listed items has been made by me or under my supervision and they conform to contract, except as noted herein or on supporting documents. 71 Mar 12 /s/Wm H. Wiggins DATE SIGNATURE OF AUTH GOVT REP		☐ POA ☐ B. DESTINATION ACCEPTANCE of listed items has been made by me or under my supervision and they conform to contract, except as noted herein or on supporting documents. DATE SIGNATURE OF AUTH GOVT REP		Quantities shown in column 17 were received in apparent good condition except as noted. 3-19-71 /s/R. G. Snyder DATE RECEIVED SIGNATURE OF AUTH GOVT REP		
TYPEO NAME AND OFFICE Wm H. Wiggins S1102A		TYPEO NAME AND TITLE		*If quantity received by the Government is the same as quantity shipped, indicate by (✓) mark. if different, enter actual quantity received below quantity shipped and encircle.		
23. CONTRACTOR USE ONLY						

FRONT

MOTOR VEHICLE INSPECTION (TRANSPORTING HAZARDOUS MATERIAL)		DATE 4 Feb 71	HOUR 08:45	REPORT CONTROL SYMBOL
NAME OF CARRIER Leonard		REPORTING INSTALLATION ANAD	CHECK ONE ☐ ORIGIN ☒ DESTINATION	
NAME OF DRIVER D. E. Campbell		SHIPMENT RECEIVED FROM Camden, Ark.	ENTERING ☐ EMPTY ☒ LOADED	
DRIVER'S STATE PERMIT NO. 4730131 Texas		GBL NO. F2479679	DOCTOR'S CERTIFICATE DATE: 1-7-71	
VEHICLE				
TYPE OF VEHICLE ☐ TRUCK ☐ TRUCK AND FULL TRAILER ☐ TRACTOR AND DOUBLE TRAILERS ☒ TRACTOR AND CLOSED SEMI-TRAILER ☐ TRACTOR AND FLAT-BED TRAILER		TRUCK LICENSE NUMBER 6757 Miss.	TRAILER(S) NUMBER LLAV5	SLEEPER CAB ☒ YES ☐ NO
		I.C.C. NUMBER 19227	LICENSE(S) NUMBER 5T-250 A/A.	VALID LEASE ☐ YES ☒ NO
NOTE: All of the following items shall be checked on empty equipment prior to loading. Items with an asterisk (*) shall be checked on incoming loaded equipment.				
ITEM NO.	CHECK APPROPRIATE COLUMN (See reverse side for explanatory notes)	SATIS- FACTORY	UNSATIS- FACTORY	REMARKS (Explain unsatisfactory items; use reverse side if necessary.)
1	ENGINE, BODY, CAB AND CHASSIS CLEAN	X		
2	STEERING MECHANISM	X		
3	HORN OPERATIVE	X		
4	WINDSHIELD AND WIPERS	X		
5	SPARE ELECT. FUSES AVAILABLE	X		
6	REAR VIEW MIRRORS INSTALLED	X		
7	HIGHWAY WARNING EQUIPMENT	X		
*8	FULL FIRE EXTINGUISHERS (2) INSTALLED	X		
9	LIGHTS AND REFLECTORS OPERATIVE	X		
10	EXHAUST SYSTEM	X		
*11	FUEL USED (LP Gas Prohibited)	X		
*12	FUEL TANK, LINE AND INLET	X		
13	COUPLING DEVICES - KINGPIN LOCK	X		
*14	ALL BRAKES OPERATIVE	X		
*15	LANDING GEAR ASSEMBLY OPERATIVE	X		
16	SPRINGS AND ASSOCIATED PARTS	X		
*17	TIRES	X		
18	CARGO SPACE	X		
*19	ELECTRIC WIRING	X		
*20	TAIL GATE AND DOORS SECURED	X		
*21	FIRE AND WATER RESISTANT TARPULIN	NA		
22	ANY OTHER DEFECTS (Specify)	X		
☒ APPROVED (If rejected give reasons on reverse side, under "Remarks." Equipment shall be approved if deficiencies are corrected prior to loading.) ☐ REJECTED		SIGNATURE (of Inspector) /s/T. Mertz Keufel		
ITEMS TO BE CHECKED PRIOR TO RELEASE OF LOADED VEHICLE				CHECK
23	MIXTURES OF MATERIAL PROHIBITED BY DOT REGS. ARE NOT LOADED ONTO THIS VEHICLE			
24	LOAD IS SECURED TO PREVENT MOVEMENT			
25	WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERLOADED			
26	SEAL(S) APPLIED TO CLOSED VEHICLE. FIRE AND WATER RESISTANT TARPULIN APPLIED ON OPEN VEHICLE			
*27	SPECIAL INSTRUCTIONS (DD Form 836) RECEIVED BY DRIVER			
*28	COPY OF VEHICLE INSPECTION (DD Form 626) FURNISHED DRIVER			
*29	PROPER PLACARDS APPLIED			
*30	SHIPMENT MADE UNDER DOT SPECIAL PERMIT NUMBER 868			
SIGNATURE (of Inspector)		SIGNATURE (of Driver)		

SAMPLE

DD FORM 626
1 SEP 68

REPLACES EDITION OF 1 JAN 67, WHICH IS OBSOLETE.

Figure G-3(1). DD Form 626, Motor vehicle inspection report (coming in).

BACK

EXPLANATORY NOTES	
REFERENCES IN ITALICS BELOW ARE THE APPLICABLE PORTIONS OF THE DOT MOTOR CARRIER SAFETY REGULATIONS (M.C.S.R.) AND THE CODE OF FEDERAL REGULATIONS (C.F.R.); DOD REQUIREMENTS ARE ESTABLISHED BY THE DEPARTMENT OF DEFENSE (DOD)	
THE INSPECTOR MUST BE FAMILIAR WITH THE CITED PORTIONS OF THE SAFETY AND EXPLOSIVE REGULATIONS	
DOCTOR'S CERTIFICATE - Certificate must not be over 36 months old (M.C.S.R.) Item 1, ENGINE, BODY, CAB, AND CHASSIS CLEAN (e.g., no excessive oil or grease) - Inspect to see that engine and compartment are clean, check cab to see that no excessive grease is on cab and cab floor is free of debris; check under cab and chassis for excessive grease. (DOD Requirement) Item 2, STEERING MECHANISM - Inspect to see that steering mechanism is in good condition, in proper adjustment, correctly and securely mounted, and whether the steering gear case is leaking lubricant. Pay particular attention to the pitman arm and tie rod assembly to see that they are securely mounted and not bent out of normal shape. (DOD Requirement) Item 3, HORN OPERATIVE - Inspect to see that horn is securely mounted and of sufficient volume to serve its purpose. (M.C.S.R.) Item 4, WINDSHIELDS AND WIPERS - Inspect to see that the windshields of the tractors are free from breaks, cracks or defects which would make operation of the vehicle unsafe, that the view of the driver is not obscured by stickers, that wipers operate properly, and that wiper blades are of proper kind and in good condition. Defroster operative when conditions require it. (M.C.S.R.) Item 5, SPARE ELECTRIC FUSES - Check to see that at least one spare fuse for each kind and type of installed fuse is carried on vehicle as a spare. (M.C.S.R.) Item 6, REAR VIEW MIRRORS INSTALLED - Every truck and truck tractor shall have installed two rear vision mirrors, one at each side, firmly attached and so located as to reflect to the driver a view of the highway to the rear along both sides of the vehicle. Mirrors must not be cracked or dirty. (M.C.S.R.) Item 7, HIGHWAY WARNING EQUIPMENT - This equipment must consist of either three red electric lanterns in operating condition and three red emergency reflectors and two red flags with stands to maintain them in an upright position. Flame producing equipment is prohibited. Red flags must not be less than 12 inches square. (M.C.S.R.) Item 8, FULL FIRE EXTINGUISHERS - Inspect to see that the two full fire extinguishers utilize an extinguishing agent which does not need protection from freezing, have been inspected and labeled by Underwriters Laboratories, Inc., or equal, as complying with both classifications B and C, are securely mounted and readily accessible. (M.C.S.R.) Item 9, LIGHTS OPERATIVE - (Head-Stop-Tail-Front and Rear Clearance) - Inspect all lights and switches, including clearance lights and turn signals; make sure they are not obscured by dirt or grease or have broken lens; high and low beam switch must be operative. EMERGENCY flashers operating on front and rear of vehicle. (M.C.S.R.) Item 10, EXHAUST SYSTEM - Inspect the exhaust pipe to see that it is securely attached to the exhaust manifold, that the gaskets or packing does not show visible evidence of leakage, and that the other end is clamped securely to the muffler. Inspect the muffler to see that it is in good condition and securely mounted. Check the tail pipe to see that it is securely clamped to the muffler, properly supported, and unobstructed at its outer end. The exhaust system shall discharge at a location to the rear of the cab and beyond any saddle tanks of the tractor. (M.C.S.R.) Item 11, FUEL USED - Liquid petroleum gas burning equipment may be readily identified by the presence of pressure regulating valves in the fuel line near the tank and a breather pipe extending from the tank to the top of the cab. (DOD Requirement); (M.C.S.R.) Item 12, FUEL TANK, LINE, AND INLET - Inspect tanks and fuel lines to see that they are in completely serviceable condition, free from leaks or evidence of leakage and securely mounted. Examine caps for defective gaskets or plugged vents. Inspect the filler necks to see that they are in completely serviceable condition, securely supported and not leaking at joints. (M.C.S.R.)	Item 13, COUPLING DEVICES-KING PIN LOCKS - Inspect to see that the fifth wheel rocker plate and bed are in good condition, properly assembled and mounted, and adequately lubricated. King pin lock must operate freely and properly, lock securely, and not show excessive wear. (M.C.S.R.) Item 14, ALL BRAKES OPERATIVE - (Including hand brakes and air pressure warning devices) - Inspect for oil or grease leaks around drum flanges, pedal travel, air or vacuum line leaks, moisture in tanks, compressor build up and governor cut off. Test for proper and adequate brake application. (M.C.S.R.) Item 16, SPRINGS AND ASSOCIATED PARTS - Examine visually the springs, suspension hanger mechanisms, torsion bar assemblies, and auxiliary parts such as U-bolts, shackles, center bolts and hangers, for breakage, improper adjustment, and, as appropriate, lack of lubrication. (DOD Requirement) Item 17, TIRES - Examine all tires for cuts, bruises, breaks, and blisters. All tires with cuts or injuries extending into the cord body and those worn smooth in the center of the tread are not acceptable. Insure that stones are removed from between duals. Tires must be properly matched on dual-equipped tractors and trailers. (M.C.S.R.) Item 18, CARGO SPACE - Inspect to see that cargo space is clean and in good condition to prevent damage to lading from exposed bolts, nuts, screws, nails, or other inwardly projecting parts. Check floor to make sure it is tight and free of holes. (C.F.R.) Item 19, ELECTRIC WIRING - Electric wiring must be clean and properly secured, insulation must not be frayed or otherwise in poor condition. There must be no uninsulated wires or improper splices or connections. Electric fixtures inside the body must be protected from the elements. (M.C.S.R.) Item 20, LATCHES AND DOORS ON CLOSED EQUIPMENT SECURED - Inspect to see that all hinges are tight in body. Check for broken latches and safety chains. Doors must close securely. (M.C.S.R.) Item 21, FIRE AND WATER RESISTANT TARPULIN - If shipment is made on open equipment, check to make sure the lading is properly covered with a fire and water resistant tarpaulin. (C.F.R.) Item 23, MIXTURE OF EXPLOSIVES PROHIBITED - Check carefully to prevent loading of incompatible explosives. (C.F.R.) Item 25, WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERLOADED - Inspector should check the loading of the shipment to make sure that the loading plan or weight distribution recommendation furnished by the carrier is complied with and that the maximum gross weight that may be loaded on the vehicle for the particular shipment as stated by the carrier is not exceeded. (DOD Requirement) Item 29, PROPER PLACARDS - For Class A and B explosives check to see that the four reflectorized placards are conspicuously displayed, one in front, rear, and each side, and the lettering is at least 6 inches high. Placards will be furnished by the carrier. (DOD Requirements) Item 30, SPECIAL PERMIT NUMBER 868 - This item will be checked when a shipment is made under the provisions of DOT Special Permit No. 868. When checked, it signifies that the shipment was loaded in compliance with carrier's advice on maximum weight and that the driver is relieved from certifying to Items 23, 24, and 25. (DOD Requirement)
REMARKS	

Figure G-3(1)—Continued.

FRONT

MOTOR VEHICLE INSPECTION (TRANSPORTING HAZARDOUS MATERIAL)		DATE 5 Feb 71	HOUR 1755	REPORT CONTROL SYMBOL
		REPORTING INSTALLATION ANAD		CHECK ONE ☐ ORIGIN ☐ DESTINATION
NAME OF CARRIER REA Express		SHIPMENT RECEIVED FROM		ENTERING ☐ EMPTY ☒ LOADED
NAME OF DRIVER H. T. Kilgore		DRIVER'S STATE PERMIT NO. 0989526	GBL NO.	DOCTOR'S CERTIFICATE DATE: 1-12-71
VEHICLE				
TYPE OF VEHICLE		TRUCK LICENSE NUMBER FH2889	TRAILER(S) NUMBER 704697	SLEEPER CAB ☒ YES ☐ NO
☒ TRUCK ☐ TRUCK AND FULL TRAILER ☐ TRACTOR AND DOUBLE TRAILERS ☐ TRACTOR AND CLOSED SEMI-TRAILER ☐ TRACTOR AND FLAT-BED TRAILER		I.C.C. NUMBER 66562	LICENSE(S) NUMBER IT3004	VALID LEASE ☒ YES ☐ NO
NOTE: All of the following items shall be checked on empty equipment prior to loading. Items with an asterisk (*) shall be checked on incoming loaded equipment.				
ITEM NO.	CHECK APPROPRIATE COLUMN (See reverse side for explanatory notes)	SATIS- FAC- TORY	UNSAT- ISFAC- TORY	REMARKS (Explain unsatisfactory items; use reverse side if necessary.)
1	ENGINE, BODY, CAB AND CHASSIS CLEAN	X		
2	STEERING MECHANISM	X		
3	HORN OPERATIVE	X		
4	WINDSHIELD AND WIPERS	X		
5	SPARE ELECT. FUSES AVAILABLE	X		
6	REAR VIEW MIRRORS INSTALLED	X		
7	HIGHWAY WARNING EQUIPMENT	X		
*8	FULL FIRE EXTINGUISHERS (2) INSTALLED	X		
9	LIGHTS AND REFLECTORS OPERATIVE	X		
10	EXHAUST SYSTEM	X		
*11	FUEL USED (LP Gas Prohibited)	X		
*12	FUEL TANK, LINE AND INLET	X		
13	COUPLING DEVICES - KINGPIN LOCK	X		
*14	ALL BRAKES OPERATIVE	X		
*15	LANDING GEAR ASSEMBLY OPERATIVE	X		
16	SPRINGS AND ASSOCIATED PARTS	X		
*17	TIRES	X		
18	CARGO SPACE	X		
*19	ELECTRIC WIRING	X		
*20	TAIL GATE AND DOORS SECURED	X		
*21	FIRE AND WATER RESISTANT TARPULIN	NA		
22	ANY OTHER DEFECTS (Specify)	NA		
☒ APPROVED (If rejected give reasons on reverse side, under "Remarks." Equipment shall be approved if deficiencies are corrected prior to loading.) ☐ REJECTED		SIGNATURE (of Inspector) /s/Carlisle		
ITEMS TO BE CHECKED PRIOR TO RELEASE OF LOADED VEHICLE				CHECK
23	MIXTURES OF MATERIAL PROHIBITED BY DOT REGS. ARE NOT LOADED ONTO THIS VEHICLE			X
24	LOAD IS SECURED TO PREVENT MOVEMENT Seal AOY 8227			X
25	WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERLOADED			X
26	SEAL(S) APPLIED TO CLOSED VEHICLE. FIRE AND WATER RESISTANT TARPULIN APPLIED ON OPEN VEHICLE			X
*27	SPECIAL INSTRUCTIONS (DD Form 836) RECEIVED BY DRIVER			X
*28	COPY OF VEHICLE INSPECTION (DD Form 626) FURNISHED DRIVER			X
*29	PROPER PLACARDS APPLIED			X
*30	SHIPMENT MADE UNDER DOT SPECIAL PERMIT NUMBER 868			
SIGNATURE (of Inspector) /s/Carlisle		SIGNATURE (of Driver) /s/H. T. Kilgore		

DD FORM 626
1 SEP 68

REPLACES EDITION OF 1 JAN 67, WHICH IS OBSOLETE.

Figure G-3(2). DD Form 626, Motor vehicle inspection report (going out).

BACK

EXPLANATORY NOTES	
REFERENCES IN ITALICS BELOW ARE THE APPLICABLE PORTIONS OF THE DOT MOTOR CARRIER SAFETY REGULATIONS (M.C.S.R.) AND THE CODE OF FEDERAL REGULATIONS (C.F.R.); DOD REQUIREMENTS ARE ESTABLISHED BY THE DEPARTMENT OF DEFENSE (DOD)	
THE INSPECTOR MUST BE FAMILIAR WITH THE CITED PORTIONS OF THE SAFETY AND EXPLOSIVE REGULATIONS	
DOCTOR'S CERTIFICATE - Certificate must not be over 36 months old (M.C.S.R.) Item 1, ENGINE, BODY, CAB, AND CHASSIS CLEAN (e.g., no excessive oil or grease) - Inspect to see that engine and compartment are clean, check cab to see that no excessive grease is on cab and cab floor is free of debris; check under cab and chassis for excessive grease. (DOD Requirement) Item 2, STEERING MECHANISM - Inspect to see that steering mechanism is in good condition, in proper adjustment, correctly and securely mounted, and whether the steering gear case is leaking lubricant. Pay particular attention to the pitman arm and tie rod assembly to see that they are securely mounted and not bent out of normal shape. (DOD Requirement) Item 3, HORN OPERATIVE - Inspect to see that horn is securely mounted and of sufficient volume to serve its purpose. (M.C.S.R.) Item 4, WINDSHIELDS AND WIPERS - Inspect to see that the windshields of the tractor are free from breaks, cracks or defects which would make operation of the vehicle unsafe, that the view of the driver is not obscured by stickers, that wipers operate properly, and that wiper blades are of proper kind and in good condition. Defroster operative when conditions require it. (M.C.S.R.) Item 5, SPARE ELECTRIC FUSES - Check to see that at least one spare fuse for each kind and type of installed fuse is carried on vehicle as a spare. (M.C.S.R.) Item 6, REAR VIEW MIRRORS INSTALLED - Every truck and truck tractor shall have installed two rear vision mirrors, one at each side, firmly attached and so located as to reflect to the driver a view of the highway to the rear along both sides of the vehicle. Mirrors must not be cracked or dirty. (M.C.S.R.) Item 7, HIGHWAY WARNING EQUIPMENT - This equipment must include either three red electric lanterns in operating condition and two red flags or three red emergency reflectors and two red flags with standards adequate to maintain them in an upright position. Flame producing equipment is prohibited. Red flags must not be less than 12 inches square. (M.C.S.R.) Item 8, FULL FIRE EXTINGUISHERS - Inspect to see that the two full fire extinguishers utilize an extinguishing agent which does not need protection from freezing, have been inspected and labeled by Underwriters Laboratories, Inc., or equal, as complying with both classifications B and C, are securely mounted and readily accessible. (M.C.S.R.) Item 9, LIGHTS OPERATIVE - (Head-Stop-Tail-Front and Rear Clearance) - Inspect all lights and switches, including clearance lights and turn signals; make sure they are not obscured by dirt or grease or have broken lens; high and low beam switch must be operative. EMERGENCY flashers operating on front and rear of vehicle. (M.C.S.R.) Item 10, EXHAUST SYSTEM - Inspect the exhaust pipe to see that it is securely attached to the exhaust manifold, that the gaskets or packing does not show visible evidence of leakage, and that the other end is clamped securely to the muffler. Inspect the muffler to see that it is in good condition and securely mounted. Check the tail pipe to see that it is securely clamped to the muffler, properly supported, and unobstructed at its outer end. The exhaust system shall discharge at a location to the rear of the cab and beyond any saddle tanks of the tractor. (M.C.S.R.) Item 11, FUEL USED - Liquid petroleum gas burning equipment may be readily identified by the presence of pressure regulating valves in the fuel line near the tank and a breather pipe extending from the tank to the top of the cab. (DOD Requirement); (M.C.S.R.) Item 12, FUEL TANK, LINE, AND INLET - Inspect tanks and fuel lines to see that they are in completely serviceable condition, free from leaks or evidence of leakage and securely mounted. Examine caps for defective gaskets or plugged vents. Inspect the filler necks to see that they are in completely serviceable condition, securely supported and not leaking at joints. (M.C.S.R.)	Item 13, COUPLING DEVICES-KING PIN LOCKS - Inspect to see that the fifth wheel rocker plate and bed are in good condition, properly assembled and mounted, and adequately lubricated. King pin lock must operate freely and properly, lock securely, and not show excessive wear. (M.C.S.R.) Item 14, ALL BRAKES OPERATIVE - (Including hand brakes and air pressure warning devices) - Inspect for oil or grease leaks around drum flanges, pedal travel, air or vacuum line leaks, moisture in tanks, compressor build up and governor cut off. Test for proper and adequate brake application. (M.C.S.R.) Item 16, SPRINGS AND ASSOCIATED PARTS - Examine visually the springs, suspension hanger mechanisms, torsion bar assemblies, and auxiliary parts such as U-bolts, shackles, center bolts and hangers, for breakage, improper adjustment, and, as appropriate, lack of lubrication. (DOD Requirement) Item 17, TIRES - Examine all tires for cuts, bruises, breaks, and blisters. All tires with cuts or injuries extending into the cord body and those worn smooth in the center of the tread are not acceptable. Insure that stones are removed from between duals. Tires must be properly matched on dual-equipped tractors and trailers. (M.C.S.R.) Item 18, CARGO SPACE - Inspect to see that cargo space is clean and in good condition to prevent damage to loading from exposed bolts, nuts, screws, nails, or other inwardly projecting parts. Check floor to make sure it is tight and free of holes. (C.F.R.) Item 19, ELECTRIC WIRING - Electric wiring must be clean and properly secured, insulation must not be frayed or otherwise in poor condition. There must be no uninsulated wires or improper splices or connections. Wires and electric fixtures inside the body must be protected from the loading. (M.C.S.R.) Item 20, TAILGATES AND DOORS ON CLOSED EQUIPMENT SECURED - Inspect to see that all hinges are tight in body. Check for broken latches and safety chains. Doors must close securely. (M.C.S.R.) Item 21, FIRE AND WATER RESISTANT TARPULIN - If shipment is made on open equipment, check to make sure the loading is properly covered with a fire and water resistant tarpaulin. (C.F.R.) Item 23, MIXTURE OF EXPLOSIVES PROHIBITED - Check carefully to prevent loading of incompatible explosives. (C.F.R.) Item 25, WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERLOADED - Inspector should check the loading of the shipment to make sure that the loading plan or weight distribution recommendation furnished by the carrier is complied with and that the maximum gross weight that may be loaded on the vehicle for the particular shipment as stated by the carrier is not exceeded. (DOD Requirement) Item 29, PROPER PLACARDS - For Class A and B explosives check to see that the four reflectorized placards are conspicuously displayed, one in front, rear, and each side, and the lettering is at least 6 inches high. Placards will be furnished by the carrier. (DOD Requirements) Item 30, SPECIAL PERMIT NUMBER 868 - This item will be checked when a shipment is made under the provisions of DOT Special Permit No. 868. When checked, it signifies that the shipment was loaded in compliance with carrier's advice on maximum weight and that the driver is relieved from certifying to Items 23, 24, and 25. (DOD Requirement)
REMARKS	

SAMPLE

Figure G-3(2)—Continued.

SPECIAL INSTRUCTIONS FOR MOTOR VEHICLE DRIVERS		DATE 2 Mar 71
TO: (Carrier's Name and Trailer Number) Trucking Firm		FROM: (Installation Issuing Instructions) ANNISTON ARMY DEPOT ANNISTON, ALA. 36201
BILL OF LADING NUMBER	THIS TRUCK IS LOADED WITH (Commodity description)	
TYPE PLACARDS REQUIRED EXPLOSIVE	EXPLOSIVE PROJECTILES FOR CANNON CLASS "A"	
IN CASE OF FIRE 1. If any part of the vehicle outside of actual contents catches fire, take vehicle to a clear or uninhabited area, if practicable, and/or attempt to put fire out immediately with hand extinguishers or other available means. If practicable, ask someone to notify the fire department. Call to the attention of fire or police personnel at the scene of the fire the information on this form. 2. Fires may be fought until the flames reach the cargo, at which time firemen and other personnel should be withdrawn to a safe distance, as noted in 5 and 6 below. 3. If in convoy, other trucks proceed to safe distance. 4. Water may be used on this cargo ☒ Yes ☐ No (See Other Specific Precautions or Instructions below) 5. Firemen should not approach closer than <u>1200</u> feet* from the fire when the fire has reached the cargo. (See Other Specific Precautions or Instructions below) 6. Public should not approach closer than <u>2000</u> feet* from fire. 7. As soon as practical, notify the nearest military installation.		IN CASE OF ACCIDENT 1. Set brake and block vehicle to prevent movement. 2. Post flags by day, and red electric lanterns or reflectors by night, warning traffic approaching from each direction. 3. Call for ambulance, if necessary. 4. Notify nearest police. 5. Notify nearest military installation if cargo is damaged. ADDITIONAL NOTIFICATION REQUIRED (By phone or wire as soon as possible) CONSIGNOR OR CONSIGNEE IN CASE OF BREAKDOWN 1. Do not attempt to tow loaded vehicle. 2. Post flags by day and red electric lanterns by night, warning traffic from each direction.
GENERAL PRECAUTIONS		
1. While operating over public roads, keep at least 300 feet from trucks loaded with explosives or other dangerous articles; a greater minimum distance must be maintained if required by state or municipal regulations. 2. Protect the public from the hazards of the cargo. 3. Do not allow smoking or use of matches or lighters in or near the vehicle. 4. Obey all state and local traffic regulations. 5. Do not exceed posted speed limits.		6. Stop at all railroad crossings. 7. Use designated routes. Whenever possible, avoid congested residential or business areas. 8. Do not permit unauthorized persons to ride on vehicles. 9. At other than carrier rest stops or interchange points, select safe parking space at stopping locations designated by the carrier. Vehicles carrying explosives should not group together at these stopping locations.
OTHER SPECIFIC PRECAUTIONS OR INSTRUCTIONS		
PREPARE TO FIGHT INCIPIENT FIRES STARTED BY EXPLOSION SAMPLE		
These instructions must be transferred to each subsequent driver for turn-in at final destination. If more than 3 drivers are involved, the additional signatures should be made on an extra sheet and attached hereto.	SIGNATURE OF SHIPPER REPRESENTATIVE /s/ WOODROW W. OWENS, TO, TA FOR TO	SIGNATURE OF FIRST DRIVER
	SIGNATURE OF SECOND DRIVER	SIGNATURE OF THIRD DRIVER
* The distances shown are minimum; greater distances should be used whenever possible.		

DD FORM 836

REPLACES EDITION OF 1 JUN 66, WHICH MAY BE USED.

Figure G-4. DD Form 836, Special instructions for motor vehicle drivers.

APPENDIX M **US CHEMICAL MUNITIONS** **(STANAG 2137)**

Munition	Agent type	Agent quantity	Packaging data	Hazards
1-gal chemical land-mine.	HD -----	1 gal. (3.62 kg) ---	Shipped empty 10 to a box.	Agent when filled.
M23 chemical land-mine.	VX -----	2 gal. (7.24 kg) ---	3 mines packed in a steel drum with styrofoam cushion. Top layer of cushion material contains fuzes and adapters.	Shipped filled with HE components installed. Leaks most likely around burster well seams.
M2A1 4.2-in. mortar cartridge.	CG, CK, HD ---	6 lb (2.72 kg) -----	Each round packed in fiber container. Two fiber containers in wood box. Shipped with burster installed. Fuze may be installed.	High explosive and toxic agent. Leaks most likely around fuze well.
M60 105mm howitzer cartridge.	HD -----	2.97 lb (1.35 kg) --	One round per fiber container. Two fiber containers per wooden box. Shipped with burster installed. Fuze may be installed.	High explosive and toxic agent. Leaks most likely around fuze well.
M360 105mm howitzer cartridge.	GB -----	1.63 lb (.738 kg) ---	One round per fiber container. Two fiber containers per wooden box. Shipped with burster installed. Fuze may be installed.	High explosive and toxic agent. Leaks most likely around fuze well.
MK53 5-in./38 gun shell.	GB -----	3.3 lb (1.49 kg) ----	One round per fiber container. Two fiber containers per wooden box. Shipped with burster installed. Fuze may be installed.	High explosive and toxic agent. Leaks most likely around fuze well.
MK54 5-in./54 gun shell.	GB -----	4.2 lb (1.90 kg) ---	One round per fiber container. Two fiber containers per wooden box. Shipped with burster installed. Fuze may be installed.	High explosive and toxic agent. Leaks most likely around fuze well.
M122 155 mm gun projectile.	GB -----	6.5 lb (2.94 kg) ---	Palletized. 8 to a pallet. Burstern and fuzes shipped separately.	Toxic agent only. Leaks most likely around fuze well.
M104 155mm gun projectile.	HD -----	11.70 lb (5.30 kg) --	Palletized. 8 to a pallet. Burstern and fuzes shipped separately.	Toxic agent only. Leaks most likely around fuze well.
M110 155 mm howitzer projectile.	HD -----	9.70 lb (4.39 kg) --	Palletized. 8 to a pallet. Burstern and fuzes shipped separately.	Toxic agent only. Leaks most likely around fuze well.

Munition	Agent type	Agent quantity	Packaging data	Hazards
M121A1 155 mm howitzer projectile.	VX ----- GB -----	6.0 lb (2.71 kg) --- 6.5 lb (2.94 kg) ---	Palletized. 8 to a pallet. Bursters and fuzes shipped separately.	Toxic agent only. Leaks most likely around fuze well.
M426 8-in. howitzer projectile.	VX ----- GB -----	14.5 lb (6.57 kg) -- 14.5 lb (6.57 kg) --	Palletized. 3 to a pallet ..	Toxic agent only. Leaks most likely around fuze well.
MK40 warhead for 5-in. rocket.	GB ----- VX -----	4.84 lb (2.19 kg) ----- 9.0 lb (4.07 kg) ---	Palletized. 15 complete rockets in shipping con- tainer on pallet. Each end open for access to sampling ports.	High explosive and toxic agent. Leaks likely anywhere due to thin wall alumin- um construction.
M55 115mm rocket ---	GB -----	1.0 lb (4.98 kg)		
LITTLE JOHN 318mm, M206 warhead w/52 M139 bomblets.	GB -----	67.6 lb (30.62 kg) Each Bomblet, 1.3 lb (.589 kg).	Shock-mounted in her- metically sealed steel container equipped with sampling ports.	Shipped complete with filled bomblets and detonating cord. Fuze and motor ship- ped separately.
SERGEANT M212 missile w/330 M139 bomblets.	GB -----	429 lb (194.3 kg) --	Shipped in 3061-lb con- tainer equipped with sampling ports. Bomb- lets are enclosed in war- head in plastic bag.	Shipped complete with filled bomblets and detonating cord. Fuze and motor ship- ped separately.
HONEST JOHN 762mm, M190 war- head w/368 M139 bomblets.	GB -----	473 lb (214.3 kg) --	Shipped in 1725-lb con- tainer w/warhead in heat-sealed barrier bag with 5 sampling ports. Container has access doors to sampling ports.	Shipped complete with filled bomblets and detonating cord. Fuze and motor ship- ped separately.
M70A1 115-lb gas bomb.	HD -----	60 lb (27.18 kg) ---	Shipped with shipping bands around bomb. Burster and fuze ship- ped separately.	Toxic agent only. Leaks most likely around nose fuze well.
MK94 500-lb gas bomb (modification of MK82 low drag).	GB -----	108 lb (48.92 kg) --	Shipped with shipping bands around bomb. Burster and fuze ship- ped separately.	Toxic agent only. Leaks most likely around nose and tail fuze wells.
MK116 Mod 0 500-lb gas bomb (weteye).	GB -----	352 lb (159.46 kg) --	Shipped in reuseable hermetically sealed container. Sampling ports on each end of container (screwed in). Fuzes and burster not installed.	Toxic agent only. Thin wall extruded alum- inum casting.
MC-1 750-lb gas bomb.	GB -----	24 gal. ----- 220 lb (99.66 kg)	Shipped two per pallet with shipping bands in- stalled around bomb. Fuze and burster ship- ped separately.	Toxic agent only. Leaks most likely around nose and tail fuze wells and filling plug in baseplate.
M34A1 1000-lb gas bomb cluster w/76 M125A1 bombs.	GB -----	198 lb (86.69 kg) --	Casing and nose loaded with M125A1 bombs shipped in shipping guard around each end and middle. Tail fin, fuzes, and ejection sys- tem shipped separately.	Toxic agent and ex- plosive components in M125A1 bombs.
M43 750-lb incapac- itating bomb cluster w/57 M138 bomblets.	BZ -----	-----	Shipped packed in ship- ping guard with 2 end caps and 8 wood ribs with steel bands. Fuzes and tail fin shipped separately.	Detonating cord and agent. BZ in pyro- technic mix will au- tomatically release in fire.

Munition	Agent type	Agent quantity	Packaging data	Hazards
M44 175-lb. incapacitating generator cluster. (3 M16 generators consisting of 42 M6 canisters each.)	BZ		Shipped complete on a wood skid then enclosed in plywood.	BZ-pyrotechnic mix. Fire may cause ignition of the burning mix.
SUU (suspension and release unit)	= Dispenser			
BLU (bomb live unit)	= Bomblet			
CBU (cluster bomb unit)	= Cluster and Dispenser			
BLU 19/B23	GB	4 lb (1.81 kg)	Shipped in a steel container similar to gas ID kit. 10 bomblets to container.	Agent only. Explosive shipped separately.
BLU 20/B23	BZ	1 lb (.454 kg)	Shipped in a steel container similar to gas ID kit. 10 bomblets to container.	BZ-pyrotechnic mix. Fire may cause ignition of the burning mix.
CBU-15A (consists of SUU 13/A and BLU 19/B23).	GB	160 lb (72.48 kg)	SUU 13/A shipped separately from BLU 19/B23. BLU 19 shipped as stated above.	Toxic agent only.
CBU-16A (consists of SUU 13/A, and BLU 20/B23).	BZ	40 lb (18.12 kg)	SUU 13/A shipped separately from BLU 19/B23. BLU 19 shipped as stated above.	BZ-pyrotechnic mix. Fire may cause ignition.
AERO 14B liquid spray tank.	GB, VX	90 gal. (325.80 kg).	Nose, tail, and center sections shipped separately. Center section may be full of agent.	Toxic agent only. No explosive components with this munition.
TMU-28/B liquid spray tank.	VX	160.4 gal (625 kg)	Shipped filled in CNU (modified jet engine shipping container).	Toxic agent and explosive cutters. (Small charge of RDX ICC Class C explosive).



GLOSSARY

(STANAG 2154)

Accident—The unintentional release or loss of control of chemical or biological agents or radioactive material in sufficient quantities to present a public hazard.

Escort vehicle—The conveyance designated to transport the technical escort team personnel and equipment.

Airborne radioactive materials—Any radioactive material dispersed in the air in the form of dust, fumes, mists, vapors, or gases.

Approved carrier—A carrier authorized to transport Classes A and B ammunition and explosives for the Department of Defense and the Military Traffic Management and Terminal Service.

Biological material—A microorganism which causes disease in man, plants, or animals, or causes the deterioration of materiel.

Byproduct material—Any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

Car (truck) load—The quantity of freight required for the application of car (truck) load rates; a car (truck) loaded to the carrying capacity.

Carrier—The transport agency contracted or designated to transport a specified cargo from origin to destination.

Carrier, common (commercial)—A person or company other than a common carrier who, under special and individual contracts or agreements, transports passengers or property for compensation.

CBR Alpha Team—A team of specialized Army personnel maintained at each Class I Army installation for reaction to chemical, biological, or nuclear accidents/incidents.

Chemical agent—A solid, liquid, or gas which through its chemical properties produces lethal or damaging effects on men, animals, plants, or material, or produces a screening or signaling smoke.

Compatibility—The ability of a given material to exist unchanged under certain conditions of temperature and moisture, when in the presence of some other material.

Class A poison—Gases or liquids of such a nature that a very small amount of the gas, or vapor, of the liquid mixed with air is dangerous to life.

Class B poison—Less dangerous than Class A; substances, solid or liquid, other than Classes A or C; poisons which are known to be so toxic to man as to afford a hazard to health during transportation, or which in the absence of adequate data on human toxicity are presumed to be toxic to man because of their effects on laboratory animals.

Class C poisons—Liquid, solid, or gas substances which upon contact with fire or when exposed to air give off dangerous or intensely irritating fumes; do not include any Class A poisonous substances.

Consignee—The receiving agency, unit, depot, or person to whom the cargo is addressed or consigned, as indicated in the proper shipping document(s).

Consignor—The agency from which shipment is being made. This may be depot, installation, base, supply point, holding area, unit, contractor, or other agency.

Curie—(Abbreviation: military—c; civilian—ci) The unit for measuring radioactivity. One curie equals that quantity of any radioactive isotope undergoing 3.7×10^{10} disintegrations per second.

Dangerous article—Any compound, mixture, or assemblage of material as cargo which is hazardous or presents a potential danger of injury or damage, or threat to the safety of life or property in handling, storing, and/or transporting due to its explosive, combustible, flammable, corrosive, poisonous, or radioactive nature.

Decontamination—The process of making any person, object, or area safe by absorbing, de-

stroying, neutralizing, making harmless or removing chemical or biological agents, or by removing radioactive material clinging to or around it.

Dose—The total amount of ionizing radiation received by a specified area of the body or by the whole body. (The units of measure used in military training are rad and millirad.)

Empty label—All packagings and accessories which have been used for shipment of radioactive materials when shipped as empty must be securely closed, the external surface must be free of significant removable radioactive contamination, and the radiation at the external surface of this packaging must not exceed 0.5 millirem per hour.

Etiological material—A causative agent of any of the diseases listed in The Code of Federal Regulations, Title 42, "Public Health," or of any diseases prescribed by The Surgeon General, US Public Health Service.

Fissile radioactive material—The following materials: plutonium 238, plutonium 239, plutonium 241, uranium 233, or uranium 235, or any material containing any of the foregoing materials.

Fissile radioactive material packages—These are classified according to the controls needed to provide nuclear criticality safety during transportation, as follows:

1. **Fissile Class I**—Packages which may be transported in unlimited numbers in any arrangement, and which require no nuclear criticality safety controls during transportation.
2. **Fissile Class II**—Packages which may be transported together in any arrangement but in numbers which do not exceed an aggregate transport index of 50. For purposes of nuclear criticality safety control, individual packages may have a transport index of not less than 0.1 and not more than 10. The exact number of packages that can be transported will be determined, and this number will be divided into 50 to determine the transport index for each package.
3. **Fissile Class III**—Shipments of packages which do not meet the requirements of Fissile Classes I or II and which are controlled in transportation by special arrangement between the shipper and the carrier.

Flammable—Any substance which can easily be ignited under ordinary conditions.

Incident—Any event which constitutes a hazardous situation which if not corrected could result in an accident.

Individual—Any human being.

Ionizing radiation—Electromagnetic or particulate radiation, which may cause ionization within the cells or tissues of the body. For the purpose of these regulations, alpha and beta particles, gamma rays, X-rays, and neutrons are examples of types of ionizing radiation.

Label—A caution marker fixed to the outside of a package (container) of explosives and other dangerous material, giving a pictorial representation of the contents.

Large quantity radioactive materials—A quantity, the aggregate radioactivity of which exceeds that specified as follows:

Group I or II	20 curies
Group III or IV	200 curies
Group V	5,000 curies
Group VI or VII	50,000 curies
Special form material	5,000 curies

License—A license issued under the regulations in Title 10, Atomic Energy Act of 1954 as amended; Part 30, 40, or 70.

Licensee—The holder of a license described above.

Licensed material—Source material, special nuclear material, or byproduct material received, possessed, used, or transferred under a general or specific license issued by the AEC pursuant to appropriate regulations.

Less-than-car (truck) load—A quantity of freight less than that required for the application of a car- (truck-) load rate.

Low specific activity materials—Means any of the following:

1. Uranium or thorium ores and physical or chemical concentrates of these.
2. Unirradiated natural or depleted uranium or unirradiated natural thorium.
3. Tritium oxide in aqueous solutions provided the concentrations do not exceed 5 millicuries per milliliter.
4. Material in which the activity is essentially uniformly distributed and in which the estimated average concentration per gram of content does not exceed—

- (1) 0.0001 millicurie of Group I.
- (2) 0.005 millicurie of Group II.
- (3) 0.3 millicurie of Group III.

Meal ticket—A Government instrument approved by the Comptroller General of the United States for use in the procurement of meals for military personnel while in a travel status.

Minimum safe distances for radioactive shipments with personnel or undeveloped film—

1. **Rail**—See 46 CFR, paragraph 174.586 or paragraph 175.655 for rail express (T. C. George's Tariff No. 23, paragraph 174.586 or paragraph 175.655).
2. **Motor vehicle**—See 46 CFR, paragraph 177.842. (T. C. George's Tariff No. 23, paragraph 177.842).

Nonflammable—Any substance which is not flammable. This substance may be capable of burning when subject to fire, but it does not support flame.

Normal form radioactive materials—Those which are not special-form radioactive materials. Normal-form radioactive materials are grouped into transport groups.

Occupational dose—Includes exposure of an individual to radiation in a restricted area and/or in the course of employment in which the individual's duties involve exposure to radiation. Occupational dose shall not be deemed to include any exposure of an individual to radiation for the purpose of medical diagnosis or medical therapy or such individual.

Occupational exposure to ionizing radiation—An exposure incurred as a result of an individual's employment or duties. Occupational exposure shall not be deemed to include the exposure of an individual to sources of ionizing radiation for the purpose of medical or dental diagnosis or therapy.

Package—The packaging plus its contents of explosives or other dangerous articles, as presented for transportation.

Packaging—The assembly of the containers and any other components necessary to assure compliance with the prescribed packaging requirement.

Participating carriers—Those transportation agencies and activities for which T. C. George is agent and attorney as noted and on file with the Department of Transportation. (Listed in T. C. George's Tariff No. 23.)

Person—Any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group or Government agency, and any legal successor, representative, agent, or agency of the foregoing.

Placards—For radiation shipments.

1. **Rail shipment**—"Dangerous—Radioactive Material" placards as prescribed in Title 46, para 174.553, or T. C. George's Tariff No. 23, paragraph 174.553, must be applied to cars containing packages bearing a radioactive yellow-III label as prescribed in Title 46, paragraph 173.414(d), or T. C. George's Tariff No. 23, paragraph 173.414(d) and to carload lots under 46 CFR, paragraph 173.392 and 173.393, or T. C. George's Tariff No. 23, paragraph 173.392 and 173.393. The Dangerous—Radioactive Material placard for radioactive materials must be of diamond shape, measuring 10 3/4 inches on each side, and must bear the wording in red letters as outlined in 46 CFR, paragraph 174.553, or T. C. George's Tariff No. 23, paragraph 174.553.
2. **Shipment made by way of common, contract, or private carriers by public highway**—Motor vehicles transporting any quantity of radioactive materials bearing the radioactive yellow-III label shall be marked or placarded with a placard or lettering in black letters not less than four inches high on a yellow background. These placards shall be placed on all four sides of the vehicle. (Title 46, CFR, paragraph 117.823 and 173.414(d), or T. C. George's Tariff No. 23, 177.823 and 173.414(d)).

Port of debarkation—An authorized point of entry into a foreign country of CONUS.

Port of embarkation—An authorized point of departure from a foreign country of CONUS.

Rad—A measure of the dose of any ionizing radiation to body tissue in terms of the energy absorbed per unit mass of the tissue. One rad is the dose corresponding to the absorption of 100 ergs per gram of tissue (one millirad (mrad) = 0.001 rad)).

Radiation—Any or all of the following: Alpha particles, beta particles, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles, but not sound or radio waves, or visible enforced or ultraviolet light.

Radioactive labels—Labels are required on packages of radioactive material dependent on quantity and dose rate. A large quantity of radioactive materials and fissile Class II and Class III must have a radioactive yellow-III label.

Radioactive material—Any material or combination of materials which spontaneously emit ionizing radiation. Material in which the estimated specific activity is not greater than 0.002 microcurie per gram of material, and in which the radioactivity is essentially uniformly distributed, are not considered to be radioactive materials.

Radiological protection officer—An individual designated by the commander to provide consultation and advice on the degree of hazards associated with ionizing radiation and the effectiveness of measures to control these hazards. This individual shall be technically qualified by virtue of education, military training, and/or professional experience to assure a capability commensurate with the assignment.

Red blood cell cholinesterase determination—A laboratory procedure using a chemical method for determining the red blood cell cholinesterase level.

Rem—A measure of the dose of any ionizing radiation to body tissue in terms of its estimated biological effect relative to a dose of one roentgen (r) of X-ray. Any of the following is considered to be equivalent to a dose of one rem:

1. 1 roentgen due to X or gamma radiation.
2. 1 rad due to X or gamma radiation.
3. 0.1 rad due to neutron or high energy protons.
4. 0.05 rad due to particles heavier than protons and with sufficient energy to reach the lens of the eye.

Removable radioactive contamination—Radioactive contamination which can be readily removed in measurable quantities by wiping the contaminated surface with an absorbent material. Only significant if it exceeds applicable limits.

Restricted area—Any area, access to which is controlled by the licensee or his authorized representative, for purposes of protection of individuals from exposure to radiation and radioactive materials.

Roentgen—(Abbreviation: Military—r; civilian—R) That quantity of X or gamma radiation

which will produce, as a consequence of ionization, one electrostatic unit of electricity, of either sign, in 1 cubic centimeter (0.001293 gram at STP) of dry air, as measured at 0° C. A milliroentgen is one-thousandth (10^{-3}) of a roentgen.

Routing authority—An activity responsible for designating modes and/or providing transportation routing instructions for certain shipments requiring clearance prior to movement.

Routing or route order—An order specifying the mode of transportation and the means within that mode by which shipment will move.

Source material—Uranium or thorium, or any combination thereof, in any physical or chemical form or ores which contain by weight one-twentieth of one percent (0.05 percent) or more of uranium, thorium, or any combination thereof. Source material does not include special nuclear material.

Special form radioactive materials—Those which, if released from a package, might present some direct radiation hazard but would present little hazard due to radiotoxicity and little possibility of contamination. This may be the result of inherent properties of the material (such as metals or alloys) or acquired characteristics, as through encapsulation. To qualify as a special form material, the radioactive material must be either in massive solid form or each capsule must either have no overall dimension less than 0.5 millimeter or have at least one dimension greater than 5 millimeters. Each item, or the capsule material, must not dissolve or convert into dispersible form to the extent of more than 0.005 percent, by weight, by immersion for one week in water at pH 6–8 and 68° F. and a maximum conductivity of 10 microhms/centimeter, and by immersion in air at 86° F. If in massive solid form, the radioactive material must not break, crumble, or shatter if subjected to the Type B package test and must not melt, sublime, or ignite at temperatures below 1,000° F. If encapsulated, the capsule must retain its contents when subjected to the aforementioned test and must not melt, sublime, or ignite at temperatures below 1,475° F.

Special nuclear material—Plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the AEC determines to be special nuclear material, but does not include source material artificially enriched by any of the foregoing.

Surveillance—Systematic observation, inspection, and investigation of explosives and other dangerous material.

Tariff—A publication containing rates, rules, ratings, regulations, and/or changes applying to transportation and incidental services.

Technical escort—The accompanying of a shipment of chemical agents or munitions, biological, or etiological materials or munitions or radioactive material by personnel qualified and equipped to assure a high degree of safety and security for the shipment.

Technical escort team—Two or more qualified civilian or military individuals who are accompanying a shipment of chemical agents and munitions, biological, or etiological materials, or radioactive material and who are qualified and equipped to assure a high degree of safety and security for the shipment.

Transport group—Any one of seven groups into which normal form radionuclides are classified according to radiotoxicity and their relative potential hazard in transportation.

Transport index—The number placed on a package to designate the degree of control to be exercised by the carrier during transportation. The transport index to be assigned to a package of radioactive materials shall be determined by either subparagraph (a) or (b), whichever is larger. The number expressing the transport index shall be rounded up to the next highest tenth, e.g., 1.01 becomes 1.1.

1. The highest radiation dose rate, in millirem per hour at 3 feet from any accessible external surface of the package.
2. For Fissile Class II packages only, the transport index number calculated by dividing the number "50" by the number of similar packages which may be transported together.

Transportation officer—The person designated or appointed by the commander of a military activity to perform traffic management functions.

Transport vehicle—The conveyance used for the transportation of explosives or other dangerous articles and includes any motor vehicle, rail

car, or aircraft. Each cargo-carrying body (trailer, van, box car, and so forth) is a separate vehicle.

Type A packaging—Packaging which is designed in accordance with the general packaging requirements of Title 46, paragraph 173.24 and 173.393 (T. C. George's Tariff No. 19, supplement 7) which is adequate to prevent loss or disposal of the radioactive contents and to retain the efficiency of its radioactive shielding properties in the package is subject to the tests prescribed in paragraph 173.393(b).

Type A quantity and Type B quantity radioactive materials—A quantity, the aggregate radioactivity of which does not exceed that specified as follows:

Transport group	Type A Quantity (in curies)	Type B Quantity (in curies)
I	0.001	20
II	0.05	20
III	3	200
IV	20	200
V	20	5,000
VI and VII	1,000	50,000
Special form	20	5,000

If the amount for Type A packaging is exceeded, then Type B packaging is required. If Type B packaging is exceeded, then a waiver must be obtained for shipment.

Type B packaging—Packaging which meets the standards for Type A packaging and, in addition, meets the standards for hypothetical accident conditions of transportation as prescribed in Title 46, paragraph 173.398(c) (T. C. George's Tariff No. 23).

Unrestricted area—Any area to which access is not controlled by the licensee or his authorized representative for the purpose of protection of individuals from exposure to radiation and radioactive materials.

User—The activity, section, division, or other organizational unit which has been assigned responsibility for the use, operation, or storage of radiation sources.

Vehicle—A self-propelled, boosted, or towed conveyance for transporting a burden on land, sea, or through air or space.



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